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No. X. OF VOL. I., 1907. No. 4358. Vol. CLXXII. LONDON, SATURDAY, MARCH 9, 1907. PRICE 7d.; POST FREE, 7½d. [Pp. 120+32.



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ON

# PYORRHŒA ALVEOLARIS.

*Delivered before the Royal College of Surgeons of England on Feb. 8th, 1907.*

BY KENNETH W. GOADBY, D.P.H. CAMB., M.R.C.S. ENG., L.R.C.P. LOND., L.D.S. R.C.S. ENG.,

DENTAL SURGEON, BACTERIOLOGIST, AND LECTURER ON BACTERIOLOGY, NATIONAL DENTAL HOSPITAL, ETC.

MR. PRESIDENT, FELLOWS OF THE COLLEGE, AND GENTLEMEN,—I desire at the outset to express my appreciation of the great honour conferred upon me by the Royal College of Surgeons in appointing me an Erasmus Wilson lecturer—a lectureship that in its records holds such names as the distinguished founder Sir Erasmus Wilson, Sir Frederick Treves, Mr. F. S. Eve, and many other distinguished surgeons and pathologists. Mr. President, I would querest you to convey to your council my deep sense of the honour you and they have conferred.

Chronic suppuration of the alveolar margin has been popularly known since 1867 as Rigg's Disease and the origin of the application of this man's name to the disease is somewhat curious. In the summer of 1867 J. M. Rigg gave a demonstration on the use of certain instruments for removing salivary deposits from the necks of teeth before the Connecticut Valley Dental Association, who were so charmed with his instruments that they, the Connecticut Valley Dental Association, decided to confer upon the disease the name of their colleague. Subsequently, in the New York *Medical Journal* for 1885, exception was taken to the term and Rigg was challenged to give his description of the disease on which his name had been conferred. This he declined to do and repudiated any association of his name with the disease, and no published description of the disease, however meagre, was ever published by Rigg. The disease had been previously described with considerable accuracy and under the term alveolar pyorrhœa by Toirac in 1779, while a description also exists by Fuchard in 1746 in a book entitled "Le Chirurgien Dentiste," and by Gendarme in 1778 in "Les Maladies de la Bouche" as conjoint suppuration of the alveoli and gums.

The earliest account of the disease I have found is given by "Ambrose Pare, of Laval in Maine Counsellor and cheefe Chirurgeon to the King," 1550, who calls attention in Liber 17 of "divers preternaturall Affects whose cure is performed by Surgery" to this disease of the gums as follows:—

> The teeth are also troubled with preternaturall Affects. For sometimes they ake by relaxation of the gums—the gummes are relaxed—by an internal or antecedent (cause) as by defluxion of acid or waterish humours from the brain, or by want of nourishment in old bodies. If the teeth grow loose by the meanes of decaying gums, the disease is then incurable.

And later:—

> Pieces of meat in eating sometimes sticke between the teeth and becoming corrupt by long staying there, doe also hurt the teeth themselves, and spoile the sweetnesse of the breath.—Many folkes by their owne default gather an earthy filth of a yellowish colour, which eats into them little by little.

The extracts show not only that the disease of the gums I am discussing was well known among the gentry of the courts of Francis and Henry of Navarre where Ambrose Paré practised but what an acute observer this old surgeon was. Several other French early surgeons[1] have from time to time written concerning the condition under the terms expulsive gingivitis and symptomatic alveolar arthritis. The term Rigg's disease, therefore, rests upon an entire misconception and has been abandoned by most dental surgeons. The descriptions of the disease given by different observers correspond in their main particulars and the majority of accounts deal with the later stages of the alveolar destruction, when the disease has already made considerable inroads upon the attachment of the teeth to the bone and the typical picture of pyorrhœa alveolaris is well established.

[1] Magitot: Transactions of the Odontological Society, vol. xix., 1887.

The accounts of the disease by Mill[2] and Newland-Pedley[3] are among the best published and the following extract from Newland-Pedley's paper gives a very concise picture of the advanced stage of alveolar destruction.

> The mucous membrane, especially that adjacent to the teeth, appears deeply congested and filled with venous blood, tumid and thickened, but not filling up the interstices of the teeth at their necks, and detached for some distance from the surface from the fangs. A thick fœtid discharge may often be pressed up from between the teeth and the mucous membrane, which gives to the breath a very repulsive odour. This condition of things continuing, the alveolus becomes absorbed, whilst the fangs of the teeth become coated with a layer of thin, hard, greenish-brown tartar; ultimately, the disease progressing, the teeth one by one drop out. The alveolar margin is sometimes thickened in substance. The pain varies; it may be neuralgic from the first, but is not generally considerable until the periosteum is involved.

Newland-Pedley considers that the removal of the affected teeth cures the lesion where the teeth have stood.

The gums at the dental margins where the transition from muco- to dental periosteum takes place are particularly liable to a small degree of traumatism from angular substances contained in foodstuffs, and further to more passive injuries resulting from the accumulation of deposits of débris in secluded positions, the latter predisposed to by irregularity in the arrangement of the individual teeth. Colyer[4] has called attention to the frequency of a disease simulating alveolar pyorrhœa which is frequent in London omnibus horses. Many of these animals show localised suppuration in the gum around individual teeth, such suppurative foci invariably containing angular particles of hay. The local appearance of the skulls of these horses is similar to that of localised pyorrhœa in the human subject. Accumulations of salivary deposit in the human subject likewise cause passive congestion of the gum margin, and by some these deposits have been credited with the cause of alveolar pyorrhœa, but it is common knowledge that the removal of such deposits is frequently followed by a recovery of the soft tissues, whereas in other cases, notwithstanding the complete removal of all deposits, suppuration still progresses. There is considerable presumptive evidence that at times the disease is an infection which either takes place locally and remains localised or spreads to all the sockets. Some of Colyer's specimens certainly favour this view.

In the normal human mouth the gums are closely applied to the necks of the teeth, and a small process projects between the two contiguous teeth filling up the increased space that exists between the teeth at their necks, the transverse diameter of the crowns at the point of approximation being greater than that of the necks at the gum margin; the alveolar process in the interdental spaces is thicker than at other parts of the circumference, it contains a little marrow, and is often nearer the free surface than elsewhere. The gums themselves, although applied closely to the teeth, are not attached at their free edges, the line of attachment being a little lower than the free edge, and blending with the dento-alveolar periosteum at the commencement of the cementum covering the roots. Any inflammatory condition associated with engorgement of the vessels of the gum is followed by increase in the depth of this slight natural pocket, and should the slight local congestion persist for any length of time infection by bacterial invasion is rendered possible by the accumulations and irritation of débris. A further anatomical peculiarity of the gum margin is the small amount of sensory nerve supply, rendered necessary by the provision for mastication, but which allows to pass unnoticed many slight abrasions and wounds. In certain animals, notably carnivora, the gum margins are protected in a measure by a thickening of the enamel at the gum margins, while in the human mouth a slight outward projection of the enamel exists at the tooth necks, while the wedge-shape form of the individual teeth splits the masticated food in such a manner that the mass is already widely divided when it reaches the gum. Irregularities in position of individual teeth largely eliminate this wedge effect and the gum tissue may be separated from the tooth or injured locally.

Many disease conditions have been cited as predisposing causes of pyorrhœa, such, for instance, as diabetes mellitus, rickets, enteric fever, &c., as well as the debilitating effects of repeated pregnancy, all, be it noted, associated either

[2] Mill: New York Medical Journal, vol. xlii., 1885.

[3] Newland-Pedley: Transactions of the Odontological Society, vol. xix., 1887.

[4] J. F. Colyer: Brit. Med. Jour., vol. ii., 1905, p. 567.

with general loss of muscular tone, or with general inflammation of the fauces and oral mucous membrane. The exceedingly insidious onset and great chronicity of alveolar pyorrhœa, and the facts presently to be adduced relating to the bacteriology of the disease, point to the preliminary stage of infection as either a local infection around two or more teeth, or a general infection spreading from the buccal mucous membrane which allows synchronous infection of the whole gum margin. In the early stage the gums are red, slightly swollen, and somewhat thickened at their margins, but with no sign of pus; the whole of the teeth are frequently tender on pressure and uncomfortable in mastication, as is frequent in common coryza. This stage may spontaneously subside or may progress to the formation of slight pockets or spaces between the fangs of the teeth and gum, the periosteum of the tooth being denuded either in the interdental spaces only or irregularly round the whole circumference. The interdental portion of the socket is the most common position for the commencement of the disease, and in the early stages the pocket around the affected teeth is deepest in this situation. *Pari passu* infiltration of the deeper layers of the gum and mucoperiosteum by a round-celled infiltration takes place, and the disease progressing, the alveolar margin becomes also attacked, and a condition of rarefying osteitis supervenes, which gradually replaces the upper portions of the alveolar process until the whole of the socket of the tooth is removed. Infection in the bone and the soft tissue is not regular, and is marked by exacerbations and remissions; as a rule, extremely little pain exists. During the periods of remission irregular formation of bone may take place along the alveolar margin, which may become thickened. Débris collects in the ever-increasing spaces between the tooth and the bone, but the bone infection is always deeper than the depth of the separation of the dental periosteum from the root of the tooth. Frequently masses of granulation tissue, soft and engorged with blood, form in the interdental spaces and often develop to an extent that simulates sarcoma. A number of these cases are included in the bacteriological examinations. The odour of the breath differs in individual cases and may be either excessively foul, due to the presence of organisms which form indol (see Tables V. and VI.), or may be sickly and sour when yeasts and bacteria of active carbohydrate fermentation are responsible.

The inspection of the buccal mucous membrane in cases of pyorrhœa, particularly in advanced cases, shows a number of small white stellate points, somewhat hard and shotty, lying underneath the mucous membrane and corresponding in position to the site of the disease of the gum margin. It is not uncommon also to find a similar line of these infected mucous glands round the mucous margin of the lips. Bacteria of various species, generally bacilli, may be obtained from them. As the disease progresses the gums lose their hyperæmia and become pale and bloodless, due apparently to the cutting off of the blood-supply in the infected bone, while the teeth begin to loosen and finally drop out. Deposits of a hard nodular greenish tartar are generally to be found upon the roots adhering to the remains of the periosteum, but where the periosteum is entirely stripped it does not form. This tartar contains more organic matter than does the tartar formed above the gum margin and is very rich in bacteria. As has already been pointed out, pain is an uncommon symptom, consequently little or no attention is directed to the first stages of the disease, and it is not until the teeth begin to loosen, or perhaps only when one individual tooth becomes tender on mastication, that the sufferer thinks it worth while to take any notice of the matter. Very occasionally acute local pain exists, but if pain is present it is generally referred to other places. The symptoms which are first observed by the patient are the unpleasant taste, especially in the morning, and that the gums bleed easily, a fact commonly disregarded, but invariably a sign of the disease. It is perhaps hardly necessary to point out that normal gums do not bleed when a tooth-brush is used and that bleeding gums are always a pathological sign.

Chronic suppuration of the alveolus is widely distributed and far more common than is frequently supposed. It is generally endemic, occurring in a surprisingly large proportion of all adults, but may also appear in epidemic form when large numbers of persons are attacked, as in the Swiss epidemic, quoted by Newland-Pedley,[5] or in the epidemic amongst the American troops in Cuba; evidence of its existence is, as I have stated elsewhere,[6] to be found in early Egyptian skulls. It affects animals in confinement[7]; it is not at all infrequent in pet dogs, horses, and monkeys; it occurs in India amongst the natives in the gaols, where it is frequently confounded with scurvy, and is common amongst certain of the natives in West Africa. It is frequently present as a sequela of chronic dysentery, sprue, and perhaps malaria, and after exanthematous fevers, influenza, and typhoid fever. Sometimes small local epidemics occur, as observed by Coplans,[8] and I have recently heard of cases among the natives in Northern Nigeria.

So far I have only considered the local manifestion, but there is a much more serious side—namely, the general infection of the body that occurs in not only late but early alveolar pyorrhœa. Hunter[9] has called attention to the association of certain anæmias with diseases of the gums, and a considerable number of cases recorded by Godlee,[10] Roughton,[11] and others show the curious remote effects which are frequently associated with dental diseases. The alveolar discharges in these cases teem with bacteria, as will be seen later, the species being for the most part not acutely pathogenic for animals, but producing local suppuration and tissue necrosis when injected. In three instances—namely Cases 53, 64, and a case of pemphigus—I have succeeded in obtaining bacteria from the blood stream identical in cultural characters with those obtained from the mouth. Further, the gum margin in its hypertrophic condition is able more easily to absorb bacterial products which thereby gain entrance directly into the blood stream. There are three channels of importance by which infection may take place from the gums: (1) Spread of infection by continuity of tissue, by which the antrum and other accessory nasal sinuses, the eye, and possibly the ear, may become infected; (2) the ingestion of bacteria and bacterial products by way of the stomach; and (3) direct entrance of bacteria and their toxin by way of the gum.

Of the various general symptoms which are to be found associated with alveolar pyorrhœa the commonest are anæmia of a secondary nature, not very marked, a blood count of about 3,000,000 red cells, and a hæmoglobin of from 60 to 70, with a fairly marked leucocytosis; gastro-intestinal disturbance of a toxæmic nature, frequently associated with neurasthenia, rarely pain after food, but with periodic attacks of acute pain lasting for several days, not in any way associated by the patient with the mouth condition. Pigmentation of the skin, especially of the face; acne-form eruptions on the face, back, and chest; mild, irregular furunculosis; chronic rheumatic pains, especially muscular, with occasional joint swelling; bullous eruptions of the skin (pemphigus case); recurrent stomatitis, with periodic crops of small painful ulcers. Depression, often amounting to melancholia, is by no means uncommon, while general malaise and extreme fatigue on even slight exertion are common features. It is often remarked that a very large number of individuals are seen whose mouths are apparently affected with a marked degree of alveolar infection but who do not show any symptoms of illness. Careful inquiry generally shows that such persons are not by any means normal, and that from time to time they present objective signs of toxæmic or other infection. They are often unable to bear continuous exertion, even of a very slight nature.

Before passing to the bacteriological section, a short reference is essential to what does and does not constitute "oral sepsis" as a potential factor in the production of general infection. For the present purpose diseases of the mouth may be divided into two divisions: (*a*) caries of the teeth; and (*b*) affections of the soft tissues of the mouth. These may coexist or may be unassociated. It is true, dental caries may progress to the formation of alveolar abscess but this brings into operation the involvement of the soft tissues and bone. Hunter[12] has compared the caries of teeth to

[5] Newland-Pedley: Ibid.

[6] K. W. Goadby: Ibid., 1905, p. 562.

[7] Bland-Sutton: Transactions of the Pathological Society, vol. xxxviii., p. 456.

[8] Coplans: Transactions of the Epidemiological Society, vol. xxiii., p. 29.

[9] William Hunter: Oral Sepsis as a Cause of Disease, Practitioner, 1900.

[10] Rickman Godlee: THE LANCET, Dec. 5th, 1903, p. 1551.

[11] Roughton: THE LANCET, Oct. 18th, 1902, p. 1027.

[12] Hunter: Ibid.

that of bone necrosis, but dental caries exists in the majority of cases independently of close association with the blood stream; no inflammatory reaction of physiological correlation exists in carious dentine until the tooth pulps become involved. On the other hand, inflammation of the gums frequently exists without any dental caries. I have shown elsewhere that carious dentine rarely produces any local abscess when inoculated into animals, whereas pus from the gums frequently does. Oral sepsis therefore includes any mouth affection of an inflammatory nature involving the soft tissues, the most important diagnostic signs being local bleeding on the slightest provocation and the presence of pus, only found as a rule by applying pressure to the gums.

## BACTERIOLOGY.

Although literature relating to the present subject is fairly extensive, it does not include a large amount of bacteriological research. The reason for this would seem to be the great complexity of bacterial forms met with in the pus and in the curious disparities that nearly always exist between the organisms seen on the cover slip direct and those found growing in cultivations, and possibly to the comparative rarity with which acute and urgent oral manifestations occur in the course of disease in general.

Malassez and Galippe[13] made a number of observations and isolated two organisms, which on being inoculated into animals (rabbits and guinea-pigs) produced localised suppuration and abscesses in the joints. Their description of the organism as a "double bubble" rather leads one to suppose that it was of the coccal group, but in the absence of bacteriological data it is impossible to say. Miller,[14] whose work on the micro-organisms of the mouth is well known, isolated a large number of different bacteria (29 in all) from cases of pyorrhœa in men and dogs. The staphylococci were found occasionally, three times altogether in 12 cases. Some of the other organisms isolated caused local or general infection when inoculated into animals, but Miller states that he was unable to associate any one particular organism with the disease, neither does he appear to have isolated or met with the organisms found by Galippe and Malassez. Black,[15] Kirk,[16] and Cooke[17] in America have published observations regarding the bacteriology of diseased conditions of the gums, but do not suggest any especial bacteria which appear to be associated with pyorrhœa. Arkövy,[18] describing certain acute cases of alveolar suppuration, attributed the disease to probable infection by the streptococcus. In a certain number of other cases, especially in gangrenous wounds of the mouth, he describes[19] an organism (bacillus gangrænæ pulpæ) which is apparently closely associated. So far, however, I have not been able to identify this organism amongst my cultures. A very large number of organisms of all species have been found from time to time in the "mouth" by many observers, but unfortunately no mention is made of the presence or absence of suppuration along the gum margins of the cases from which they were isolated. Matzuschita[20] gives a list of 60 different bacteria which have been met with in the mouth and sputum, including the well-known pathogenic bacilli.

The bacteriology of other parts of the air passages—namely, the lungs and trachea and also the nose—has received a good deal of attention from bacteriologists[21]; and in many cases, especially in those dealing with the bacteriology of bronchitis, the derivation of certain bacteria from the mouth has been suggested. Among these, in the paper by Ritchie,[22] a classification of the bacteria isolated is given, many of which are premised to have come from the mouth, probably by post-mortem infection with buccal and tracheal mucus.

A number of the different varieties of the bacteria found in diseased conditions of the lung may be derived from the oral secretion, and in the routine examination of throats for the presence of diphtheria bacilli mouth organisms naturally occupy a prominent place. It is therefore of considerable general interest, apart from the relationships they may have to oral disease, to tabulate the various bacteria that I have found in suppuration of the gum margins. I have therefore reviewed the bacteriological notes of my cases during the last ten years, and have attempted to schedule the organisms and their morphological form into certain varieties for purposes of convenient description. The bacteriological methods used were as follows. Cover-slip films were made in some cases from the gum margin and in others from the interdental spaces and pockets after irrigation with boiled water. Antiseptics were discontinued owing to their inhibitive effect upon the cultures. The films made were stained by one of the aniline dyes in the first portion of the work, generally aniline gentian violet, but latterly Leishman's modification of Romanowsky was found to give better results. Agar streaks were made at the same time, plated by the smear method, and the colonies picked off at the end of from two to five days and examined by the usual methods. In a number of the cases films were also stained by Ziehl-Neelson and by Gram's method. During the earlier part of the work only a few of the isolated organisms were tested on ordinary media—namely, those that appeared to occur with the greatest regularity. But as will be seen from the Tables I. and II. very little evidence was obtained of any one organism occurring with sufficient regularity to suggest its causal relationship with the disease under investigation. In order to control the bacteriological findings as far as possible the bacteria occurring in other conditions of the mouth were also investigated. In Tables I. and II. are shown the various cases from which bacteria were derived other than pyorrhœa—namely, gingivitis, ulcerative stomatitis, simple ulceration of the gum, the gums in scarlet fever, and normal gums. The chief fact that is brought out from the tables is that a very much larger variety of species is found in the gums in ulcerative conditions and that the bacteria found on the cover-slips directly in gingivitis and ulcerative stomatitis show a very curious similarity to those found in pyorrhœa. The number of cases in which spirochætæ, spirilla, and comma-shaped bacilli were found is of interest. In most diseased conditions of the mouth spirilla and spirochætæ invariably appear in large quantities. They, however, as rapidly disappear upon the use of local remedies, notwithstanding the fact that the disease itself does not.

Microscopical examination of the stained films of pus shows the presence of only a small number of corpuscles, the discharge containing in addition much mucoid material taking up the stain (Leishman or aniline gentian violet) readily, together with an incredible number of organisms of widely different morphology. The pus cells, which vary in quantity in different cases, generally contain bacteria, either cocci or short bacilli, occasionally thread-forms; many cells show degeneration. If gum blood be also present on the films many eosinophile cells are seen and a good many mononuclears. Epithelial débris from the buccal walls and gum is also present, but not in sufficient quantity to warrant the statement that epithelial discharge is the chief phenomenon in the alveolar pockets.

It is possible—in fact, I feel convinced—that the majority of the morphological forms, particularly the large threads and the shorter threads, which show darkly staining dots in their interior, belong to fewer species than is at first sight apparent. The fragments of the smaller threads, especially those showing the dotted appearance when stained by Leishman's method, also take up the stain of Neisser's method. A few of the larger forms, especially the swollen ones, are portions of the bacillus fusiformis. I have succeeded in obtaining cultivations of these (Table V.) and have observed many of the swollen and other forms in cultivations. But I have not seen spirilla or spirochætal forms in my cultures as described by Lewkovicz.[23] I shall refer to these organisms again.

Cocci are almost invariably found on the direct films if search is made, especially those stained by Gram's method. There are as well a number of non-Gram staining cocci. In the cultures made cocci of one sort or another, and always a streptococcus, may be isolated.

Various attempts were made to determine the regular occurrence of pathogenic bacteria by inoculating animals with the pus itself. A number of these animals died and

[13] Malassez and Galippe: Comptes Rendus de la Société de Biologie, 1884.
[14] W. D. Miller: Micro-organisms of the Human Mouth, p. 329.
[15] L. Black: Indep. Pract., New York, August, 1887.
[16] W. Kirk: Dental Cosmos, 1898.
[17] J. Cooke: Ibid., 1899.
[18] J. von Arkövy: Brit. Med. Jour., 1904.
[19] Arkövy: Untersuchungen über die Pathologie und Therapie des Abscessus Alveolaris Chronicus, Vierteljischrift für Zahnheilkunde, xiv., heft 3.
[20] Teisi Matzuschita: Bacteriologische Diagnostik, 1902, Jena, p. 583.
[21] Centralblatt für Bakteriologie, ref. xxxvii., p. 101, Literature.
[22] W. T. Ritchie: Bacteriology of Bronchitis, Journal of Pathology nd Bacteriology, vol. vii., p. 1.
[23] Lewkovicz and Leishman: Ibid., 1906, Band xii.

SUMMARY OF THE CASES FROM WHICH THE BACTERIOLOGICAL STATISTICS ARE DERIVED.

1. *Pyorrhœa alveolaris.*—90 cases (35 males and 55 females). Symptoms (local): Gums swollen and purple; bleeding readily; gum and dental periosteum detached from teeth; discharge of pus thick and slimy, often profuse; wasting of alveolus; loosening of one or more teeth. The following general symptoms were also present: Secondary anæmia in 15 cases; hypertrophy of gums (local and general) in 5 cases; flatulence, dyspepsia, and intestinal indigestion in 20 cases; acne and skin eruptions in 14 cases; chronic rheumatism (muscular) in 9 cases; antral suppuration in 4 cases; local necrosis of jaw in 3 cases; empyema and lung abscess in 1 case; septicæmia and death in 2 cases; cancer of tongue and fauces in 1 case; and acute pemphigus in 1 case.

2. *Simple gingivitis.*—12 cases. Local symptoms: hyperæmia of gum margins; no pus; no loosening of teeth or alveolar destruction; sordes on teeth. No general symptoms.

3. *Ulcerative stomatitis.*—6 cases. Ulcerated and yellow necrotic patches on gums and buccal mucous membrane; gums friable; teeth loose in the necrotic patches. Subnormal temperature; malaise; diarrhœa or constipation.

4. *Simple local ulceration due to accumulation of tartar.*—4 cases. Slight marginal ulceration disappearing on removal of tartar. No pus; no loosening of teeth. No general symptoms.

5. *Scarlet fever.*—5 cases. Gums normal. No ulceration or pus.

6. *Normal gums.*—17 cases. No local or general disease.

TABLE I.—*Showing the Bacterial Forms found in the Pus and Sockets of 90 Cases of Alveolar Pyorrhœa. Compared with Ulcerative Stomatitis, Simple Gingivitis, Ulceration due to Salivary Deposit and Normal Gums.*

| Morphological form. | Alveolar pyorrhœa. Pus (superficial) = 50. | Alveolar pyorrhœa. Sockets (deep) = 40. | Ulcerative stomatitis = 6. | Gingivitis (simple) = 12. | Tartar ulceration = 4. | Scarlet fever; normal gums = 5. | Normal gums; no disease = 17. |
|---|---|---|---|---|---|---|---|
| Spirilla, spirochetæ ... | 37 | 19 | 6 | 9 | 4 | 0 | 0 |
| Comma bacilli ... ... | 32 | 11 | 3 | 9 | 4 | 0 | 0 |
| Thick articulated threads ... ... ... ... | 12 | 8 | 6 | 4 | 2 | 0 | 0 |
| Thin articulated threads ... ... ... ... | 5 | 7 | 6 | 0 | 0 | 0 | 0 |
| Thick non-articulated threads ... ... ... ... | 25 | 22 | 6 | 6 | 3 | 3 | 0 |
| Thin non-articulated threads ... ... ... ... | 24 | 26 | 6 | 10 | 3 | 2 | 1 |
| Fine and slender bacilli | 6 | 27 | 0 | 1 | 0 | 0 | 3 |
| Thick bacilli ... ... ... | 11 | 7 | 0 | 2 | 0 | 0 | 0 |
| Pointed ,, ... ... ... | 8 | 2 | 4 | 2 | 0 | 0 | 0 |
| Stropto ,, ... ... ... | 15 | 18 | 2 | 3 | 1 | 0 | 0 |
| Short ,, ... ... ... | 13 | 21 | 1 | 0 | 2 | 1 | 0 |
| Curved ,, ... ... ... | 9 | 12 | 3 | 3 | 0 | 1 | 1 |
| Straight ,, ... ... ... | 5 | 2 | 0 | 3 | 0 | 3 | 7 |
| Bean-shaped bacilli ... | 1 | 3 | 6 | 2 | 0 | 0 | 0 |
| Staphylococci... ... ... | 1 | 1 | 5 | 0 | 0 | 0 | 0 |
| Diplococci ... ... ... | 14 | 11 | 2 | 2 | 2 | 4 | 16 |
| Cocci in masses ... ... | 8 | 26 | 3 | 9 | 2 | 3 | 0 |
| Streptococci ... ... ... | 5 | 2 | 1 | 0 | 0 | 1 | 0 |
| Isolated cocci ... ... ... | 21 | 3 | 0 | 0 | 0 | 0 | 0 |
| Sarcinæ ... ... ... ... | 11 | 0 | 1 | 2 | 2 | 2 | 2 |

TABLE II.—*Showing the Bacteria Isolated from 90 Cases of Alveolar Pyorrhœa, with similar comparison.*

| — | Pus = 50. | Sockets = 40. | Ulcerative stomatitis = 6. | Gingivitis = 12 | Tartar ulceration = 4. | Scarlet fever = 5. | Normal mouths = 17. |
|---|---|---|---|---|---|---|---|
| Staphylococci ... ... | 29 | 34 | 4 | 2 | 2 | 3 | 0 |
| Cocci (brown colonies) | 3 | 13 | 3 | 0 | 0 | 0 | 0 |
| Cocci (S. viscosus) ... | 6 | 19 | 2 | 0 | 0 | 0 | 0 |
| Streptococci ... ... ... | 30 | 25 | 4 | 12 | 4 | 4 | 16 |
| Sarcinæ ... ... ... ... | 8 | 3 | 1 | 0 | 0 | 0 | 1 |
| Motile bacilli ... ... ... | 17 | 14 | 4 | 7 | 1 | 1 | 0 |
| Streptobacilli ... ... ... | 12 | 4 | 0 | 1 | 0 | 0 | 0 |
| Short thick bacilli ... | 6 | 12 | 1 | 0 | 0 | 1 | 0 |
| Bacilli forming threads | 6 | 9 | 2 | 2 | 1 | 0 | 0 |
| Bacillus maximus... ... | 6 | 1 | 0 | 0 | 0 | 1 | 0 |
| Yeast ... ... ... ... | 2 | 3 | 1 | 0 | 0 | 0 | 0 |
| Spirilla ... ... ... ... | 2 | 3 | 1 | 3 | 0 | 0 | 0 |
| "Bacilli" ... ... ... ... | 12 | 14 | 1 | 0 | 0 | 0 | 0 |

many recovered; some exhibited local lesions, others general infection but without giving any regular or uniform results. Up to this point, then, my observations tended to confirm the observations and conclusions of Miller and other observers that the disease was not due to any specific organism, or if such an organism existed it had been missed among the innumerable number of bacteria present. My researches had reached this point when Sir (then Professor) A. E. Wright published his discovery relating to the opsonins,[24] and I hastened to apply the method to the study of pyorrhœa. I was at once struck by the fact that in the cases of pyorrhœa which showed some form of constitutional disturbance, such as toxæmia, anæmia, various more or less severe forms of gastric and intestinal indigestion, &c., a distinctly low opsonic index was shown to certain bacteria obtainable from the mouth. The work thereupon entered on a new phase, applying the opsonic method for the separation of the most important of the bacteria into groups.

Tables III., IV., and V. set out the detailed bacteriological examination of 36 cases of alveolar pyorrhœa, giving the organisms found on the cover slips direct; the cultural reactions of the organisms isolated are given in Tables IV. and V. A number of other organisms which did not grow on the usual cultural media—namely, agar—are omitted. It will be seen that a large number of organisms of the group cocci were isolated, and that of these staphylococci were numerous. The organisms included under coccis and tetracocci (Table III.) are a form of coccus Gram-negative and forming large flat colonies, with a central projection, later tending to become wrinkled. These cocci invariably die out when transferred on to other media, and in only one or two instances have they grown for any length of time. They are also usually associated with a longish bacillus, but it is extremely difficult to separate them. The whole of the colony comes away upon the platinum needle, and is so tough and gelatinous that it is almost impossible to produce a satisfactory emulsion, and when the colonies do grow on the plates made from the emulsion, transference to another tube results in no growth. In Table IV. the cultural characters of the various cocci isolated are given. Group (*a*) give remarkable regularity in their cultural reactions. The others (*b*) and (*d*) all show some degree of variation, whilst the group (*e*) differs in many respects from the staphylococcal group, although its colour is suggestive of staphylococcus citreus. This variation in cultural character is of considerable importance from the point of view of treatment. Gordon[25] and Andrewes[26] have shown that amongst the streptococci a very marked grouping may be obtained by their fermentative activity. And Andrewes[27] has pointed out that the infectivity of the streptococci bears a certain general relation to their cultural activities; so much so that it is possible to group the streptococci found in acute and chronic streptococcal infections in classes corresponding to their cultural characters. It follows, therefore, that there is presumably also some difference in the individual organisms themselves and that the use of a vaccine of the one will not produce immunity against other varieties. Wright[28] has shown that when a vaccine made from some staphylococcus other than that obtained from the patient does not produce a diminution in certain cases of acne the use of a vaccine made from the patient's own staphylococci is productive of beneficial effect.

The number of staphylococci scheduled in Table IV. is not very large, but it shows that differences exist between the typical staphylococcus, either aureus or albus, and the general run of organisms obtained from the gum margin. The problem of treatment is thus rather complicated, as it entails the use of vaccines isolated from individual cases. But this will be referred to in its appropriate place. Suffice it to say in passing that of the staphylococci obtained from the mouth those most virulent for animals (rabbits) have been in every case those which nearly approach or exactly resembled the staphylococcus aureus in their cultural characteristics. It may be that a prolonged residence in the mouth of any given type of organism may modify its biological character; in fact, the majority of organisms obtained in pure culture from the mouth would rather lead

[24] Sir A. E. Wright: Proceedings of the Royal Society, vols. lxxii. and lxxiii.

[25] M. H. Gordon: Local Government Board Reports, vol. xxxiii.; THE LANCET, Nov. 11th, 1905, p. 1400.

[26] F. W. Andrewes: THE LANCET, Sept. 15th, 1906, p. 708.

[27] Andrewes: Transactions of the Pathological Society, 1906.

[28] Wright: THE LANCET, March 29th, 1902, p. 874.

TABLE III.—DETAILED BACTERIOLOGICAL ANALYSIS OF 36 CASES OF PYORRHŒA ALVEOLARIS IN WHICH CERTAIN GENERAL SYMPTOMS WERE PRESENT.

| Case. | Notes. | Smears direct. A. | | | | | | | | | Organisms isolated. B. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cocci. | Spirochætæ and commas. | Threads, thick. | Threads, thin. | Bacilli, fine. | Bacilli, thick, short. | Bacilli, curved. | Bacilli, atrepto. | Bacilli, pointed. | Strepto-cocci. | Staphylo-cocci A. | Staphylo-cocci B. | Staphylo-cocci C. | Staphylo-cocci D. | Staphylo-cocci E. | Cocci S. | Tetracocci. | Bacilli A. | Bacilli B. | Bacilli C. | Bacilli D. | Bacilli E. | Yeast. |
| 50 | A.C.T.B. | + | · | + | · | + | + | · | + | · | + | · | + | + | · | + | + | · | · | · | · | · | · | + |
| 51 | N.B. | + | · | · | · | + | + | · | + | · | + | · | · | · | · | · | + | + | · | · | · | · | · | · |
| 52 | H. | + | · | · | · | + | + | · | · | · | + | · | · | · | + | · | + | · | · | + | · | + | · | · |
| 53 | T.H. | + | + | + | + | + | + | + | + | · | + | · | · | · | + | · | + | · | · | · | · | + | + | · |
| 54 | A.D.C.T. | + | + | + | + | + | + | · | · | · | + | · | · | · | + | · | + | + | · | · | · | · | · | + |
| 55 | A.D.B.C. | + | + | + | + | + | + | + | + | · | + | · | · | · | · | · | + | · | · | + | · | · | · | · |
| 56 | E. | + | · | + | + | + | · | · | · | · | + | · | + | · | + | + | + | + | · | · | · | · | · | · |
| 57 | A.T.B. | + | · | + | + | + | · | · | · | · | + | · | · | · | · | · | + | + | · | · | · | · | · | · |
| 58 | D. | + | · | + | + | + | + | · | · | · | + | · | · | · | + | · | + | · | + | · | + | · | · | · |
| 59 | A.D. | + | + | + | + | + | + | · | · | · | + | + | + | · | · | · | · | · | · | · | · | · | · | · |
| 60 | D. | + | + | + | + | + | + | · | · | · | + | · | · | · | + | · | · | · | + | · | · | + | · | · |
| 61 | E.A. | + | · | + | + | · | + | · | · | · | + | · | · | · | + | · | + | · | · | · | · | · | · | · |
| 62 | E. | + | · | + | + | · | + | · | · | · | + | · | · | · | · | · | + | · | + | · | · | · | · | · |
| 63 | E.D.T. | + | + | + | + | + | · | · | · | · | + | · | · | · | + | + | + | + | · | · | · | · | · | · |
| 64 | D.B.L. | + | + | + | + | + | + | + | + | · | + | · | · | · | · | · | · | · | + | · | · | · | · | · |
| 65 | A.T.D. | + | + | + | + | + | + | + | · | · | + | · | · | · | + | · | · | · | · | · | · | · | · | · |
| 66 | A.D. | + | · | + | + | · | + | · | · | · | · | · | · | · | + | · | · | · | + | · | · | · | · | · |
| 67 | E.D. | + | + | + | + | + | + | · | + | + | + | · | · | · | + | + | + | + | · | · | · | · | · | · |
| 68 | T. | + | + | + | + | + | + | + | + | + | + | · | · | · | + | · | · | · | · | · | · | · | · | · |
| 69 | N. | + | + | + | + | + | + | + | + | · | + | · | · | · | · | · | · | · | · | + | · | · | · | · |
| 70 | A.T.D. | + | + | · | + | + | + | · | · | · | + | + | · | · | · | · | + | · | · | · | · | · | · | · |
| 71 | L. | + | · | + | + | · | + | · | + | · | + | · | · | · | · | · | · | · | + | · | · | · | + | · |
| 72 | T.D. | · | · | · | · | · | · | · | · | · | + | · | · | · | · | · | · | + | · | · | · | · | · | · |
| 73 | T.A.D.L. | + | · | + | + | + | + | + | + | · | + | · | · | · | + | + | + | · | · | · | · | · | · | · |
| 74 | B.T. | + | · | · | + | · | · | · | · | · | + | · | · | · | · | · | · | + | · | · | · | · | · | · |
| 75 | T. | + | + | + | + | + | + | + | + | + | + | + | · | · | · | · | + | · | · | · | · | · | · | · |
| 76 | A.N.D. | + | · | + | + | + | + | · | · | · | + | · | · | · | · | · | · | · | · | · | · | · | · | · |
| 77 | T.L.A. | + | + | + | + | + | + | + | + | · | + | + | · | · | · | · | · | · | + | · | · | · | · | · |
| 79 | D.C. | + | + | + | + | + | + | + | + | · | + | · | + | · | · | + | · | · | · | · | · | · | · | · |
| 81 | A.T. | + | · | · | + | + | + | · | · | · | + | · | · | · | + | + | + | · | · | · | · | · | + | · |
| 82 | T. | + | · | · | + | · | + | · | · | · | + | · | · | · | · | · | · | · | · | + | · | · | · | · |
| 83 | A.T. | + | · | + | + | · | + | · | · | · | + | · | · | · | · | · | + | · | · | · | + | · | · | · |
| 84 | T. | + | + | + | + | + | + | + | + | + | + | + | · | · | · | · | · | · | · | · | + | · | · | · |
| 85 | E.B.A. | + | · | + | + | + | + | · | · | · | + | · | · | · | · | · | · | · | + | · | · | · | + | + |
| 86 | T. | + | + | + | + | + | + | · | · | · | + | · | · | · | · | · | · | · | · | · | · | + | · | · |
| 88 | D.T | + | + | + | + | + | + | + | + | · | + | · | · | · | + | · | + | · | · | · | · | · | · | · |

+ = organism present in coverslip smears (A) or isolated from case (B). · = organism not present or not isolated. The letters in column headed "notes" refer to the most important general symptoms present in the cases: A = anæmia; B = malaise and depression; C = loss of weight; D = dyspepsia; E = skin eruptions; H = hypertrophy of the gums; L = antrum disease; N = necrosis of jaw; T = toxæmia. The detailed cultural characters of the organisms isolated from these cases are given in Tables IV. and V. under the respective groups.

one to this conclusion, especially as they do not seem to give their best cultural reaction until they have been cultivated for some time in artificial media. To what special factor such an alteration is due I do not feel at present competent to suggest.

*Staphylococci.*—The largest number of organisms in Table IV. belong to the staphylococcal group, but they do not by any means conform to one group alone. I have tested the organisms on certain carbohydrate media and have given all the reactions. The last two carbohydrates, starch and dextrine, are not of great value in grouping the organisms; the first six are the most important. The liquefaction of gelatin is also of little value; some of the mouth organisms do not liquefy this media when first isolated, but become more and more inclined to peptonise gelatin after several generations. The staphylococci have been arranged in four groups, according to two main types: (*a*) staphylococcus aureus, and (*b*) staphylococcus albus. The two sub-groups (*c*) and (*d*) are related to the first two groups. The two staphylococci "Guy's" and "Pus" were used as controls for the aureus group; the first one was sent to me by Dr. J. W. H. Eyre; the second was isolated from an abscess. The staphylococcus S was isolated from a suppurating finger and was used as control for the albus type.

The first group (*a*) contains five staphylococci which gave exactly the same cultural characters as the staphylococcus aureus; the first four were tested on rabbits and produced kidney infection and multiple abscesses. The second group (*b*) gave only one organism which corresponds to the staphylococcus albus type. In the sub-groups (*c* and *d*) four cocci are related to the aureus type and 15 to the albus. Both of these two sub-groups, however, as is seen from the table, show considerable variations, both in their fermentation and their relation to production of indol and nitrite, the production of nitrite being determined by their growth on nitrate broth; the clotting of milk is also variable in the two sub-groups.

The fifth group (*e*) differs considerably from either of the first two types in that no fermentation of carbohydrate was obtained in any of the five instances, and milk, nitrite, and production of indol were negative in each case. Liquefaction of gelatin is very slow in most instances and generally takes place rather in the form of a cup only partially filled by the liquefied material. The morphology of these organisms is not the regular staphylococcal form seen in the other groups, but tends more to isolated cocci and diplococci. The sixth group is not so well defined as the others, the organisms in this showing a good deal of variation. All of them give tetracoccal forms and the colonies

TABLE IV.—DETAILED CULTURAL CHARACTERS OF COCCI ISOLATED FROM 36 CASES OF PYORRHŒA SET OUT IN TABLE III.

| Case number. | Morphology. | Glucose. | Lactose. | Maltose. | Sucrose. | Inulin. | Mannite. | Starch. | Dextrine. | Indol. | Nitrite. | Litmus milk. Acid. | Litmus milk. Clot. | Broth. Precipitate. | Broth. Turbidity. | Broth. Flocculi. | Liquefaction of 10% gelatin. | Gram's stain. | Chromogenesis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Group (a)—Staphylococcus Aureus.* | | | | | | | | | | | | | | | | | | |
| S. Guy's. | Staphylococcus aureus. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | Orange yellow. |
| S. Pus. | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | .. |
| 59 | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | . |
| 70 | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | .. |
| 77 | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | . |
| 75 | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | .. |
| 84 | .. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | .. |
| | *Group (b)—Staphylococci.* | | | | | | | | | | | | | | | | | | |
| 50 | Staphylococci | A | A | A | A | A | A | A | A | * | — | + | + | + | + | — | + | + | Yellow (not orange) |
| 59 | .. | A | A | A | A | — | A | — | A | + | + | + | — | + | + | — | + | + | Yellow. |
| 64 | . | A | A | A | A | A | A | A | A | * | | + | + | + | + | — | + | + | .. |
| 79 | .. | A | A | A | A | A | A | A | A | — | — | + | + | + | + | — | + | + | .. |
| | *Group (c)—Staphylococcus Albus.* | | | | | | | | | | | | | | | | | | |
| S. S. | Staphylococcus albus. | A | A | A | A | A | A | A | A | * | — | + | + | + | + | + | + | + | White to gray. |
| 50 | .. | A | A | A | A | A | A | A | A | * | — | + | + | + | + | — | + | + | .. |
| | *Group (d)—Staphylococci.* | | | | | | | | | | | | | | | | | | |
| 58 | Staphylococci. | A | A | A | A | + | A | | | — | — | + | — | + | + | — | + | + | Grey to brownish. |
| 52 | .. | A | — | A | — | A | A | — | — | — | — | + | + | + | — | + | + | + | .. |
| 56 | .. | A | — | A | — | A | A | — | — | — | — | + | + | + | — | — | + | + | .. |
| 60 | .. | A | A | A | A | — | A | | | — | — | + | — | + | + | — | + | + | .. |
| 61 | .. | A | A | A | A | — | A | | | — | — | + | — | + | + | — | + | + | .. |
| 63 | .. | A | — | A | — | — | — | | | — | — | + | + | + | + | — | + | + | .. |
| 64 | .. | A | — | A | — | — | — | | | | | + | — | + | + | — | + | + | .. |
| 66 | .. | A | — | A | — | — | — | | | | | + | — | + | + | — | + | + | .. |
| 67 | .. | A | A | A | A | — | — | | | — | — | + | — | + | + | — | + | + | .. |
| 73 | .. | A | A | A | A | — | — | | | — | — | + | — | + | + | — | + | + | .. |
| 53 | .. | A | — | A | — | A | A | | | | | + | — | + | + | — | + | + | .. |
| 65 | | A | A | A | A | A | A | | | — | — | + | + | + | + | — | + | + | .. |
| 81 | .. | A | — | A | — | — | — | | | — | — | + | — | + | + | — | + | + | .. |
| 88 | .. | A | — | A | — | — | — | | | + | — | + | — | + | + | — | + | + | .. |
| 54 | .. | A | A | A | A | — | A | | | — | — | + | — | + | + | — | + | + | .. |
| | *Group (e)—Diplococci and Staphylococci.* | | | | | | | | | | | | | | | | | | |
| 63 | Diplococci and staphylococci. | — | — | — | — | — | — | — | — | — | — | — | — | + | + | — | + | + | Sulphur yellow. |
| 81 | .. | — | — | — | — | — | — | — | — | — | — | — | — | + | + | — | + | + | .. |
| 79 | .. | — | — | — | — | — | — | — | — | — | — | — | — | + | + | — | + | + | .. |
| 56 | .. | — | — | — | — | — | — | — | — | — | — | — | — | + | + | — | + | + | .. |
| 50 | .. | — | — | — | — | — | — | — | — | — | — | — | — | + | + | — | + | + | .. |
| | *Group (f)—Tetracocci and Diplococci.* | | | | | | | | | | | | | | | | | | |
| 51 | Tetracocci. | A | — | — | — | — | — | — | — | — | — | + | — | — | — | — | + | — | Grey to yellow, sticky. |
| 66 | .. | A | — | A | — | — | — | — | — | — | — | + | — | + | * | — | + | — | . |
| 54 | .. | A | A | A | A | — | — | — | — | — | — | — | — | + | * | — | + | — | .. |
| 56 | .. | A | A | A | A | — | — | — | — | * | — | + | + | — | — | — | — | — | .. |
| 72 | .. | A | A | A | — | A | — | — | — | * | — | — | — | + | + | — | + | — | .. |
| 63 | .. | A | A | A | A | — | — | — | A | — | — | — | — | + | * | — | + | — | .. |
| 74 | .. | A | — | — | — | — | — | A | A | — | — | — | — | + | * | — | + | — | .. |
| 57 | .. | A | A | A | — | — | — | — | — | — | — | — | — | + | * | — | — | — | .. |

A = Acid. + Reaction. * Slow reaction. — = No reaction or acid.

TABLE V.—DETAILED CULTURAL CHARACTERS OF BACILLI ISOLATED FROM 36 CASES OF PYORRHŒA SET OUT IN TABLE III.

| Case number. | Morphology. | Glucose. | Lactose. | Maltose. | Sucrose. | Inulin. | Mannite | Starch. | Dextrine. | Indol. | Nitrite. | Litmus milk. Acid. | Litmus milk. Clot. | Broth. Precipitate. | Broth. Turbidity. | Broth. Flocculi. | Liquefaction of 10% gelatin. | Spores. | Motility. | Anaerobiosis. | Aerobiosis. | Gram's stain. | Chromogenesis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | |
| | *Group (a) Lactose Fermenters.* | | | | | | | | | | | | | | | | | | | | | | |
| 58 | Short thick bacilli. | + | + | + | + | A | + | A | — | + | + | + | + | + | + | + | + | — | + | + | + | — | Brownish on potato. |
| 60 | ,, ,, | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | — | + | + | + | — | ,, |
| 24 | Thin bacilli. | + | + | + | A | * | + | A | — | + | + | + | + | + | + | + | + | — | + | + | + | — | Yellowish on potato. |
| 65 | Very short thick bacilli. | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | — | + | + | + | — | Brownish on potato. |
| 85 | Thick bacilli, threads. | + | + | + | A | + | + | A | — | * | — | + | + | + | + | — | * | — | — | + | + | — | ,, |
| 62 | Short thick bacilli. | + | + | + | + | A | + | — | A | + | + | + | + | + | + | — | + | — | — | + | + | — | None. |
| 71 | ,, ,, | + | + | + | — | + | + | — | + | + | + | + | + | + | + | — | ° | — | — | + | + | — | Brownish on potato. |
| 77 | Short bacilli. | + | + | + | + | + | + | — | — | + | — | + | + | + | + | — | + | — | — | + | + | — | ,, |
| | *Group (b).* | | | | | | | | | | | | | | | | | | | | | | |
| 55 | Bacilli like K.L.B. | A | A | A | · | — | — | — | — | — | — | — | — | + | + | — | — | — | — | + | + | + | Blood serum yellowish and hard colonies. |
| 52 | Clubs and palisade arrangement. | A | A | A | — | — | — | — | — | ° | — | — | — | + | — | — | — | — | — | + | + | + | |
| 69 | ,, | A | A | A | — | — | — | — | — | — | + | — | — | + | — | — | — | — | — | + | + | + | |
| 82 | ,, | A | — | A | — | — | — | — | — | ° | — | — | — | + | + | — | — | — | — | + | + | + | Yellowish serum. |
| | *Group (c).* | | | | | | | | | | | | | | | | | | | | | | |
| 56 | Short bacillus diplococcus. | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | + | + | + | + | + | — | None. |
| 83 | ,, | A | A | A | A | A | A | A | A | + | — | + | + | + | + | + | + | | — | + | + | — | Yellow. |
| 84 | ,, | A | A | A | A | A | A | A | A | + | + | + | + | + | + | + | | — | — | + | + | — | |
| | *Group (d).* | | | | | | | | | | | | | | | | | | | | | | |
| 52 | Bacillus fusiformis. | — | — | — | — | — | — | — | — | — | — | — | — | + | — | + | — | — | + | + | + | + | None. |
| 60 | ,, | — | — | — | — | — | — | — | — | + | — | — | — | + | — | + | — | — | — | + | + | — | ,, |
| 80 | ,, | — | — | — | — | — | — | — | — | — | + | + | — | + | — | + | — | — | — | + | + | — | ,, |
| 53 | ,, | — | — | — | — | — | — | — | — | — | — | — | — | + | — | + | — | — | — | + | + | — | ,, |
| | *Group (e).* | | | | | | | | | | | | | | | | | | | | | | |
| 71 | Bacilli and threads. | A | A | A | — | — | A | A | A | — | — | — | — | + | * | — | — | + | + | + | + | — | None. |
| 53 | ,, | A | A | A | — | — | — | — | — | — | — | — | — | + | ° | — | — | + | + | + | + | — | ,, |
| 53 | Bacilli, thick and threads | A | A | A | — | — | — | — | A | — | + | — | — | + | * | — | — | + | — | + | + | — | ,, |
| | *Bacilli not Grouped.* | | | | | | | | | | | | | | | | | | | | | | |
| 79 | Short bacilli. | A | — | A | A | A | — | — | A | + | — | — | — | + | — | — | + | + | — | + | + | + | Yellow. |
| 79 | ,, | A | A | A | A | — | | A | A | — | + | + | — | + | + | — | + | + | — | + | + | + | ,, |
| 58 | Fine bacilli. | A | A | A | A | A | A | A | A | — | — | + | + | — | — | — | + | — | — | + | + | + | None. |
| 86 | Curved, thin bacilli. | A | — | — | — | — | — | — | A | + | — | — | — | + | + | — | + | — | + | + | + | — | ,, |
| 86 | Thick streptococci. | A | A | — | A | — | — | — | A | — | — | + | + | + | — | + | + | — | — | + | + | — | ,, |
| 59 | Curved, bacilli. | A | A | A | A | — | — | — | A | + | — | + | + | + | — | + | — | — | — | + | + | + | Pinkish. |
| 50 | Short thick bacilli. | A | A | A | A | A | A | A | A | — | — | + | + | + | — | + | — | — | — | + | + | — | None. |
| 71 | Bacilli and threads. | — | — | — | — | — | — | — | — | — | — | — | — | + | — | — | — | — | — | + | + | — | Pinkish. |
| 71 | Bacilli, slender. | A | — | A | — | — | — | — | — | — | + | — | — | + | — | — | + | — | — | + | + | — | Yellowish. |

+ = Acid and gas or reaction. A = Acid, no gas. * = Very slow or feeble reaction. — = No reaction.

*Pathogenesis.*—Group (*a*), whole agar cultures produced subcutaneous abscesses in guinea-pigs (subcutaneous inoculation). Group (*b*), whole agar cultures produced no reaction subcutaneously or intraperitoneally. Group (*c*), as Group (*b*). Group (*d*), as Group (*b*).

are generally moist and very viscid and of a grey to yellowish colour. The type of this organism is one I have elsewhere described as staphylococcus viscosus but the organisms here scheduled do not all correspond to the description originally given; the cultural characters of each organism are therefore set out. The streptococci isolated were all of the brevis type; two of them, however, fermented mannite and are therefore probably related to the streptococcus fæcalis. As a routine method the determination of the opsonic index in regard to organisms of the groups (*a*), (*d*), and (*e*) has been latterly adopted.

The following case[29] may be cited as illustrative of the possibilities of staphylococcal infection derived from a local affection of the alveolar process. The patient, a female, aged 21 years, was admitted to Guy's Hospital on Oct. 6th, 1900, under the late Dr. J. H. Bryant for pain in the left side of the abdomen. She was married two months previously and since had had amenorrhœa. A week before admission she had complained of pain in the back which became progressively worse. She had frequent attacks of vomiting and on one occasion was said to have vomited blood. On admission the temperature was 102° F., the pulse was 114, and the respirations were 32. Constipation was present. The abdomen was rigid in the hypogastrium and left iliac region. There was no tumour; micturition was frequent. A blood examination showed: red cells, 2,900,000 per cubic millimetre; white cells, 10,000 per cubic millimetre; hæmoglobin, 45 per cent. The urine was of specific gravity 1008, with an acid reaction; pus and albumin were present. A diagnosis of pyelitis and pyonephrosis (? typhoid) was made. On Oct. 11th the Widal reaction gave clumping with 50 and 5 per cent. dilutions of serum and not with 0·5 per cent. On Nov. 14th the temperature was 104° F.; pus and albumin were present in the urine. The patient was acutely

[29] Guy's Hospital Pathological Reports, 1901.

ill and a diagnosis of uræmia was made. On Nov. 29th she aborted and gradually sinking died on Dec. 5th.

*Necropsy.*—This was performed 16½ hours after death. The heart, intestines, stomach, and spleen were normal; there were minute abscesses in the lungs, with recent pleurisy, broncho-pneumonia, and many bronchi filled with yellowish sticky pus. The larynx and trachea were also full of similar pus. The liver (which weighed 1792 grammes) was enlarged and had small abscesses on the upper surface. The left kidney was normal and the right showed minute cortical abscesses. Microscopically there were marked tubal changes, a good deal of interstitial cell infiltration, the glomeruli were not particularly affected, and the arteries were normal. The uterus was large and flabby; there was adherent blood clot at the placental site; there was no ulceration or sloughing.

In examining the mouth after the necropsy I found fairly well-marked signs of pyorrhœa alveolaris, with swollen and congested gums. In attempting to excise a portion of the upper jaw I was struck by the amount of pus which exuded from one spot and on further examination discovered an abscess cavity of fairly large size which was connected with the diseased condition of the gums. From this I obtained films and cultivations. The films showed a large number of cocci and the cultivations gave a mixed growth of streptococci and staphylococci. Cover-slip preparations made from the gum margin showed a similar picture to that mentioned in the majority of cases in Table III. Staphylococci were also obtained from the gum. All the abscesses examined contained staphylococci. Two guinea-pigs inoculated with the organisms obtained died in four days. The streptococci turned out to be the streptococcus brevis of the mouth. It appears certain that the abortion and death were referable to general infection from the diseased condition of the mouth. The staphylococcus was of the aureus type.

A certain number of lactose-fermenting bacilli have been isolated as shown in Table V. (bacilli of Group (*a*)). McConkey has shown that these lactose-fermenting bacteria are primarily of fæcal origin[30] and that they gained access to milk[31] from which they had been isolated by him in a large number of instances. In attempting, therefore, to discover the original source of infection in alveolar pyorrhœa the presence of these lactose fermenters naturally requires consideration. Further, cocci of both the staphylococcal varieties are often present in milk and may exhibit some degree of virulence. In the absence of any other obvious source of infection it would seem highly probable that the organisms to which at any rate the general symptoms attendant upon suppuration along the alveolar margin and at the alveolar process itself are due may come from contaminated milk.

Again, careful inquiry frequently suggests that alveolar pyorrhœa is a sequela of an infectious disease during which the patient was for some time upon a milk diet and the examination of the gum margins of convalescents from enteric, scarlet fever, &c., often brings to light evidence of local or general gingivitis. Pyorrhœa alveolaris frequently occurs in several members of the same family, suggesting some common origin of infection. There is, therefore, some evidence that milk may be the original source of infection.

Another factor which appears to be suggested by a consideration of the tables given is the close similarity between ulcerative stomatitis of children and alveolar pyorrhœa in adults. Real alveolar pyorrhœa is rare in children and common in adults; ulcerative stomatitis is common in children and rare in adults. On the grounds of bacterial findings I am inclined to the view that pyorrhœa alveolaris and ulcerative stomatitis of children are the same disease, the severer form—namely, the ulcerative stomatitis of children—being in adults the more chronic condition of alveolar pyorrhœa, much as diabetes is of far graver import in children than in adults. Moreover, a recurrent form of ulceration, consisting of small aphthous patches in the mouth occurring periodically, is by no means an uncommon concomitant of chronic pyorrhœa alveolaris.

The bacilli the cultural characters of which are given in Table V., with the exception of the lactose fermenters already referred to, do not show quite as regular grouping or such constant cultural similarities as do the cocci, and I have been obliged to schedule a number of organisms the cultural characters of which do not closely correspond. The bacilli of Group (*b*) are, perhaps, of interest, as they have a morphology nearly related to that of the diphtheria bacillus, showing the club form and palisade-like arrangement generally associated with that bacillus. Two of these organisms were inoculated into guinea-pigs but produced no pathogenic effect. The organisms of Group (*d*) are interesting from their peculiar morphology and from the fact that the fusiform bacilli already referred to above have been described by Bernheim,[32] Ellermann,[33] and Lewkovicz,[34] as the cause of ulcerative stomatitis. The cultures obtained by the last two observers are strictly anaerobic and grow only upon serum media. Muhlens and Hartmann have recently obtained cultures of the bacillus fusiformis from normal mouths, as well as from the crypts of the tonsils. The organisms are strictly anaerobic and will grow only on special serum media. Muhlens and Hartmann[35] disagree with the other observers regarding the pathogenicity of the organisms isolated. Their cultures showed little sign of pathogenicity; in only two cases were abscesses produced by inoculating animals. Lewkovicz, however, describes an intoxication by means of the fusiform bacillus which Muhlens and Hartmann were unable to obtain. If, however, they used material containing the organism in impure culture they were able to produce suppurative peritonitis. The organism when isolated grows in colonies very nearly resembling the streptococcus, from which it is difficult to differentiate it. The organisms in Group (*d*) have the same curious morphological character as those of the bacillus fusiformis described by the observers quoted above; they differ, however, in their ability to grow under aerobic conditions. Spirilla forms have so far not been observed; colonies of the organism almost exactly resemble those of the streptococcus. The typical fusiform bacilli make their appearance in liquid media; they are from 40 to 50 $\mu$ long and often stretch right across the field of the microscope; the central portion of the bacillus may be 7 or 8 $\mu$ wide, whilst the ends taper off to fine threads. Two guinea-pigs inoculated with this organism showed no signs of infection.

The bacilli of Group (*e*) are interesting from the fact that they were isolated from the blood of patients suffering from acute mouth disorder, whilst the third was obtained from the mouth of the second case. One other organism of this group has also been obtained in a case of pemphigus associated with acute pyorrhœa. The organism was obtained from the blood of the median basilic vein, in company in each case with a staphylococcus of the albus type. In the case of pemphigus a large number of swellings containing clear fluid were scattered about all over the body, but the clear fluid obtained from these gave no cultivation, the tubes remaining sterile. The first case (No. 64 in Table III.) eventually died from a general septicæmia, but I had no opportunity of further examination. Both the other cases recovered with energetic mouth treatment. These cases are of considerable importance in that we have definite evidence of the actual spread of bacteria from the mouth to the general blood stream.

One other organism appears in Table III. in three cases—namely, a yeast—and may be met with from time to time in certain cases of pyorrhœa, particularly in those which have a curious sweetish, sickly odour. Two of these yeasts have been inoculated into animals, the third was not. The two inoculated produced death when inoculated intravenously into rabbits; the organisms were recovered after the death of the animals, which took place in from a week to ten days, from the heart blood and the kidneys, which were found studded with innumerable small nodules comprised of closely packed masses of yeast. There were also hæmorrhages in the lungs, stomach, and intestine. The appearance of the kidney was somewhat curious, not a little resembling a form of new growth. Klein[36] describes a pathogenic yeast which was isolated from milk and which caused a marked degree of infection with nodular masses of yeast growth throughout the body of the animal. It is possible that this yeast, as well as the diphtheria-like organisms of Group (*b*), may have been derived from milk, and if anything tends to support the suggestion that the infection in alveolar pyorrhœa is very probably derived from milk.

[30] McConkey: Journal of Hygiene, July, 1905, p. 333.
[31] McConkey: Ibid., July, 1906, p. 385.

[32] Bernheim: Semaine Médicale, 1897, p. 252.
[33] Ellermann: Centralblatt für Bakteriologie, Band xxxviii., p. 136.
[34] Lewkovicz: Ibid.
[35] Muhlens and Hartmann: Zeitschrift für Hygiene, 1906, Band l., p. 81.
[36] Klein: Transactions of the Pathological Society, 1901, p. 270.

### TREATMENT.

Turning now to the application of the bacteriological knowledge gained in the treatment of the disease, it will be seen on reference to Table III. that symptoms of an infective process was present in each case and in some of great importance.

Secondary anæmia figures in a large proportion; the character of this anæmia, that of the ordinary septic secondary anæmia, I have already pointed out previously in this paper. General malaise and depression are also common features, the depression often being associated with symptoms of a neurasthenic type which in two instances bordered on melancholia. Skin eruptions of various types were also present, generally acne form, but eruptions over the nose and forehead, more approaching dermatitis, were not infrequent. Another important symptom is dyspepsia, this dyspepsia tending more to an intestinal than a gastric form. In four cases suppuration of the antrum of Highmore existed. In two cases the infection had undoubtedly spread to the antrum by way of the tooth sockets without there being any carious tooth to account for the condition. In one case (No. 73) a probe could be passed up into the antrum alongside the first upper molar, although no teeth were carious. The whole of the alveolus in this case was riddled with granulation tissue. Localised necrosis also occurred in three cases.

Local applications, curetting, electrolysis, and many other methods have been recommended for treating the local disease, all of them being directed towards removal of local agglomerations of bacteria, calculus, and débris, and the enjoinment of constant care on the part of the patient after such treatment has often cut short the disease in the earlier, and much ameliorated it even in the later, stages, but as long as lowered resistance to the infective organisms remains, so does the disease progress. These facts, and the consideration of the bacteriology of the disease, point to the urgent want of some method by which the general as well as the local infection may be attacked.

It is impossible where any marked erosion or solution of the alveolar process has taken place to cause regeneration of the bony crypts of the teeth or a re-establishment of the periosteum upon the denuded fangs. Where a considerable amount of bone infection has occurred, but without the loss of the thin margins of the sockets, and where the peridental membrane is still intact, more may be done. In the first place it is useless to endeavour to preserve the gum and other tissues above the level of the bottom of the pocket, for if the pocket be allowed to remain it only becomes the site of fresh infection and the recommencement of the disease in tissues already weakened by the diseased process. On broad general lines the alveolar pockets should be eradicated, a process that is best performed by means of the electro-cautery, only a few, at the most three, teeth being treated at a single sitting. The removal of deposits of calculus around the necks of the teeth should also be performed in the usual manner. I have observed that thorough curetting of even two or three sockets of affected teeth is generally attended by an increase of the constitutional symptoms already present. Delayed healing, especially in the case of the wounds caused by the cautery, is common and is frequently seen where multiple extraction is performed in cases of general pyorrhœa, and I think it is inadvisable to remove more than two or three of the teeth at a single sitting or undertake extensive cauterisation without previously raising the general resistance of the patient to the infecting organisms.

The method adopted is as follows. A bacteriological examination is made of material obtained from the gum pockets after syringing out with boiled water, the cultures being made on ordinary agar and maltose serum agar, and the bacteria plated out. While this is in progress a preliminary examination of the opsonic index is made to the staphylococcal Groups (*a*), (*d*), and to Group (*e*). The various organisms isolated are tested against the patient's serum. Should the index of any one of the three preliminary groups be found low the corresponding vaccine is made use of; should this not occur the organism giving the lowest index isolated from the case is used and a vaccine prepared; if more than one organism shows a low index a mixed vaccine of the several species is indicated. If more than one organism is associated, as is commonly the case, subsequent observations of the index of each are recorded and the vaccine is modified as necessary. It may also be necessary to make a further bacteriological analysis at a later date if the progress is slow, infection with other species being a possible cause. Further infection is guarded against as far as possible.

It is generally stated that the removal of the teeth arrests the local alveolar destruction and cures the disease; from this I am inclined to dissent. That the disease is very much benefited in both its general symptoms and local manifestation by the removal of the large mass of suppurating material is, of course, self-evident, and in a number of cases the reparative powers may be sufficient to eliminate the traces of the disease that still exist in the alveolus, but what undoubtedly does occur in a large number of cases is that the local condition is ameliorated, but not removed, and many of the general and sometimes most distressing symptoms may remain indefinitely. Amongst such symptoms chronic rheumatism and the neurasthenic condition are perhaps the commonest. A typical instance of this may serve as a type. The patient was suffering from chronic pyorrhœa, with a considerable, though not excessive, discharge of pus from the alveolar margin. The discharge of pus, it may be noted, is no criterion of the amount of disorganisation in the alveolar process. She had been suffering for ten years with symptoms of neurasthenia; she had gradually lost 2 stones in weight and was obliged to spend a great deal of her time lying down. When out of doors she was so nervous that she was afraid to cross a road by herself. Chronic dyspepsia, headaches, and other symptoms of toxæmia were also present. Her opsonic index to the staphylococcus aureus and mouth staphylococcus albus (Group *d*) obtained from her own mouth was respectively 0·6 and 0·5. She had been under local dental treatment by a very competent man during most of this time. Finally, it was decided to remove all the teeth. This was done and a good deal of improvement in her digestive disturbance took place. She did not, however, regain her lost weight, and the earthy pallor of her face, the general malaise, depression, and neurasthenia remained about the same. The gums were very soft but did not appear particularly abnormal. She went on in this condition for a year when her opsonic index to the same organisms was as before, 0·6 and 0·5. She was therefore treated by inoculation with vaccines corresponding to the organisms to which she exhibited a low index; no medicinal treatment was used and no change was made in her diet or methods of living. As a result of the inoculations during six months she has gained 2 stones in weight, she is able to perform her ordinary social and domestic duties without fatigue, she can walk ten miles without discomfort, and has recently learnt to drive a motor-car. Her chronic rheumatism has almost entirely disappeared; the index is 1·1. The negative phase in this case was very marked after the first two injections, but since that time the injections gave no trouble. There seems little reason to doubt that notwithstanding the removal of the affected teeth the alveolus still remained infected, due to the bacteria which had previously gained entrance from the tooth sockets. It is not at all necessary in such cases that there should be active discharge of pus, it being a well-known fact that many organisms, among which may be grouped the staphylococci, are able to remain for long periods in the tissue without producing inflammation of a sufficiently acute nature to produce actual pus, but they may produce disturbances of a chronic nature, their products becoming diffused throughout the body, keeping up symptoms already established. That a very small amount of local disturbance is able to keep up a marked degree of anæmia I have already noticed in a previously published case.[37] Cases 50, 51, 54, 63, 75, 76, 81, and 85 (Table III.) are ones in which some form of toxæmia was present with apparently little local evidence of disease, but the toxæmia was subsequent to antecedent pyorrhœa of many years' duration. In all these cases the inoculation of the appropriate vaccine has been followed by a disappearance of the toxæmic symptoms.

In Table VI. a list of opsonic indices is given showing the opsonic index to the organisms of six groups of mouth bacteria, the index in each case being the first one determined. Most of them were determined with the first sample of serum, but some of them were not so determined, the explanation being that at a subsequent period to the first examination and after treatment had been adopted with an appropriate vaccine the case showed signs of relapse, although the index to the original organism stood above normal, and

[37] K. W. Goadby: Ibid.

a further examination was consequently advisable to determine which other organism present was causing secondary infection.

The method of testing the opsonic index and manufacturing the vaccines is conducted in the manner already described by Wright.[38] The serum may be used up to three days after the withdrawal of the blood providing it remains sterile. I have tested sera a week old and found very little if any alteration, the samples tested having been obtained together, one tested at the time, the other after seven days' interval. Latterly I have adopted the method of weighing the dried residue of a measured quantity of the vaccine for its standardisation as giving more uniform results than the method of counting against normal red blood corpuscles, as first suggested by Wright. This method of weighing was made use of by Leishman[39] and others in a research on typhoid inoculation and was found to give really closer results than the method of counting. The vaccine being prepared, a suitable quantity, from 0·5 to 1·0 cubic centimetre, corresponding roughly to 250,000,000 of individual cocci, is used as a preliminary dose, the amount, of course, being regulated by the opsonic index of the patient. The inoculation is made at the lower angle of the scapula as the most convenient and least painful spot, the needle being inserted deeply, the introduction of the fluid thereby causing least discomfort.

There is rarely any immediate constitutional disturbance, but such does occur occasionally. In some of my cases fairly marked malaise, headache, vomiting and diarrhœa, have occurred, but passing off within from 24 to 48 hours, corresponding with the disappearance of the negative phase. The symptoms as a rule, however, are of an exceedingly mild nature. I have generally observed the negative and positive phases described by Wright. I have, however, also noticed in a few cases a remarkable secondary negative phase which appears to come on some four to five days after the preliminary first effects have passed away, the opsonic curve first falling and then rising in the normal manner and then instead of remaining fairly high or dropping away slowly down to the normal line has continued to fall and remain below the normal line for a period of some days. This secondary negative phase is difficult of explanation, but it may possibly be associated with the effect of other bacteria of near relationship in the same group as the vaccine organism. Further, inoculation at the proper time has always resulted in again raising the index, and by carefully watching the opsonic curve it is always possible to raise the index in a satisfactory manner. As in the various forms of disease in which the use of bacterial vaccine is now a routine method of treatment some increase in the local condition is always associated with the negative phase; the amount of pus is not largely increased, but the gums become more turgid and pain may be present.

TABLE VI.—*Showing Opsonic Indices to Various Groups of Mouth Bacteria.*

| Case. | Staphylococci. | | | | | Bacilli. | |
|---|---|---|---|---|---|---|---|
| | Group A. | Group B. | Group D. | Group E. | Group F. | Group A. | Group B. |
| 50 | 0·8 | 0·8 | 0·8 | | | | |
| 51 | 0·79 | 0·8 | 0·4 | | | | |
| 54 | 0·35 | | 0·64 | | | | |
| 55 | 1·4 | 0·95 | 1·0 | 0·7 | | | 1·0 |
| 56 | 0·56 | | 1·21 | 1·20 | 1·15 | | |
| 57 | 0·79 | | 0·61 | 1·50 | 0·53 | | 0·68 |
| 59 | 0·84 | | 1·0 | | | | |
| 61 | 1·0 | | 0·16 | | 1·01 | | |
| 62 | 0·76 | 1·94 | 0·77 | 1·30 | 0·54 | | |
| 63 | 0·73 | 0·9 | 0·73 | 0·5 | 1·05 | | 1·0 |
| 65 | 0·56 | 0·9 | 0·5 | | | 0·7 | 2·1 |
| 67 | 0·78 | 0·6 | 1·07 | 0·82 | | | 1·12 |
| 70 | 0·1 | | 0·7 | | 0·64 | | 0·24 |
| 71 | 0·73 | | 0·5 | | | 1·4 | 0·36 |
| 72 | 0·7 | 1·2 | | | | | |
| 73 | 0·6 | 1·2 | 1·0 | 0·10 | | 0·33 | 2·1 |
| 75 | 0·63 | | 1·0 | 1·0 | | | 0·77 |
| 76 | 1·2 | 0·7 | 0·5 | 1·0 | 0·9 | | 1·5 |
| 77 | 0·49 | 1·0 | 0·6 | 1·0 | | 1·10 | |
| 81 | 0·7 | | 1·0 | | | | |
| 84 | 0·8 | | 0·6 | | | | |
| 85 | 1·2 | | 0·5 | | | | |
| 86 | 1·0 | 1·0 | 1·0 | 1·0 | | | |
| 88 | 0·56 | | 0·6 | 0·56 | | | 0·89 |
| 151 | 0·5 | 1·0 | 1·0 | | | | |
| 45 | 0·6 | 1·0 | 0·5 | | | | |
| 46 | 0·9 | | 0·7 | | | | |
| 154 | 0·6 | | 1·0 | | | | |
| 155 | 0·6 | | 0·6 | | | | 1·5 |
| 156 | 0·74 | | 1·0 | | | | |
| 157 | 0·7 | | 0·7 | | | | |
| 158 | 0·9 | | 0·6 | | | | |
| 159 | 1·1 | | 0·8 | | | | |
| 160 | 0·86 | 0·62 | 0·9 | | | | |
| 161 | 1·1 | | 0·7 | 1·0 | | | |

One feature of the negative phase already pointed out in another paper[40] is of considerable interest regarding the relationship of diseased conditions of the mouth with gastro-intestinal pain. In certain cases gastro-intestinal pain, disappearing within 24 hours, has followed the inoculation of the vaccine into persons who had dyspeptic symptoms previously. The occurrence of this pain at the first inoculation might not perhaps be of especial importance, but in several instances an attack of an exactly similar nature has followed re-inoculation at a period considerably subsequent to that at which all dyspeptic symptoms had disappeared, the inoculation being given as a prophylactic measure. Such a close connexion of inoculation and dyspeptic symptoms suggests that the infection which gives rise to impairment of the digestive functions comes by way of the blood stream from the diseased gums rather than from the direct swallowing of purulent material from the mouth itself. After the preliminary negative phase improvement in the general health begins to be manifest and invariably precedes local improvement of the alveolar disease.

The establishment of the positive phase must be awaited before commencing local treatment of the gums; curetting and cauterisation are then unlikely to cause infection. The time required for healing cauterised surfaces of the gums is much shorter in the immunised than the non-immunised individual. In two instances I tested this question directly by cauterising before and after inoculating with vaccine and found the period of healing before immunisation four times as long as it was after. The effect of the immunisation upon the local suppuration is slow especially in cases complicated by secondary infection, the table of opsonic indices pointing to this. In fact, I have seen a number of cases where the local suppuration of the alveolar margin still persisted, although the general condition of the patient had so far improved that the whole of the constitutional symptoms had disappeared and loss of weight had been made up, whilst some regeneration of the alveolar sockets had undoubtedly taken place. In other cases the local suppuration has rapidly cleared up and the discharge of pus ceased after three or four inoculations. But the largest number of cases hold an intermediate position, the general symptoms rapidly disappearing, while the local suppuration clears very slowly, careful observation and re-inoculation requiring to be performed whenever the index begins to fall. By these means the opsonic index is maintained at a height in excess of normal and the local suppuration gradually subsides. In early cases the improvement is more rapid, but even when the local disease has disappeared there is some liability to re-infection, more particularly when the alveolar destruction has resulted in denudation of a considerable portion of the tooth root.

In a large proportion of cases all the teeth are not affected to the same extent and in these the treatment is particularly satisfactory. In ordinary circumstances the teeth one by one become affected, loosen, and are removed or fall out. If such a case be taken in hand, the resistance raised and kept at a high level for a considerable time, the disease around partially affected teeth may be inhibited and, the

[38] Wright: THE LANCET, Sept. 14th, 1901, p. 715, and loc. cit.
[39] Leishman: Journal of Hygiene, July, 1905, p. 384.
[40] K. W. Goadby: Transactions of the Odontological Society, March, 1906.

constitutional symptoms being relieved, the necessity for general extraction is eliminated and the use of artificial substitutes obviated. In a mouth affected by alveolar pyorrhœa nothing is of greater disadvantage to existing and healthy teeth than tooth plates, fit they never so well.

In surveying the facts and arguments set out the relationship of alveolar pyorrhœa (or alveolar osteitis, being more in accord with the pathology of the affection) to many complex symptoms manifested in parts of the body more or less remote from the jaws is explainable by infection from the gums as proved by the bacteriological evidence, such evidence pointing to the infection of the rest of the body, sometimes by the organisms themselves, at other times by their products. Some direct evidence and much circumstantial evidence adduced point to the infection taking place through the gum tissue as well as the direct ingestion of bacteria or their products. The infection has been traced to its causative agents by means of the opsonic index of the individual's blood to organisms obtained from the local disease, which points clearly to the origin of the lowering of the general resistance of the individual and the increased susceptibility of the whole of the body favouring secondary invasions. In seeking the etiology and origin of the affection evidence has been adduced strongly suggesting the derivation of the infecting bacteria from a common source of infection—milk. The knowledge obtained of the lowering of general resistance to certain organisms gives a method of treatment somewhat laborious no doubt, but giving a logical and practical method of dealing with the disease.

ABSTRACT OF

# The Milroy Lectures

ON

# KALA-AZAR, ITS DIFFERENTIATION AND ITS EPIDEMIOLOGY.

*Delivered before the Royal College of Physicians of London*

BY LEONARD ROGERS, M.D. LOND., F.R.C.P. LOND.,

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## LECTURE III.[1]

*Delivered on Feb. 28th.*

### THE LIFE HISTORY OF THE PARASITE, MODE OF INFECTION, AND PROPHYLAXIS.

MR. PRESIDENT AND GENTLEMEN,—I have now dealt with kala-azar both collectively as an epidemic and individually as a disease but have still briefly to discuss the evidence I obtained in Assam regarding its infectiousness before describing the life history of the parasite which produces it.

When I went to Assam in 1896 there was much difference of opinion as to whether kala-azar was infectious or not, the majority holding that since it was undoubtedly malarial it therefore could not be infectious, while a few contended that it was certainly a communicable disease and therefore it could not be simply malarial in nature, but no one had found time to inquire closely into the exact way in which it spread. In order to settle this important point I travelled over 150 miles on foot from village to village obtaining the histories of the introduction of the disease into them from the head men, who return all the deaths, and who were always able to give me detailed information on the subject. Very similar stories were constantly related to the effect that someone suffering from the disease had come to live in the village, usually with relatives, and shortly afterwards others residing in the same house were attacked, and on the survivors of the first infected household being taken into other families they in turn suffered, while after a year or two the disease became widespread and frequently from one-third to two-thirds of the people died from it before it began markedly to decrease. Wherever the infection had spread a similar kind of history was obtained, while whenever a village escaped, although surrounded by infected ones, it was found that for some reason or other they had no communication with each other, even if only a few hundred yards apart. Thus a small village of Brahmins, who had no intercourse with the low caste people around them, escaped, although all the surrounding villages had been attacked for several years past. Again, one part of a village which was separated from the rest by only a few small ricefields remained free for years owing to the head man not allowing them to have any intercourse even with their own relations in the infected portion. On the other hand, on visiting a village which was reported to be attacked, although all those around it were free, I found that it belonged to people who had recently moved there from a badly infected part of the district bringing the disease with them.

The extreme steps which the people sometimes took to prevent the spread of the disease afford also strong evidence of its infectiousness in their eyes. For example, a girl who had married a man in a healthy village, but who soon after was found to be suffering from kala-azar, was turned out, while even her own father in another neighbouring uninfected village was prevented from taking her into his house, so she was living in a grass hut erected in the open rice fields at the time of my visit. A similar plan of isolating cases was adopted by the Garos, who are reported to have gone so far as to render the kala-azar patients comatose with drink and then to burn them in their huts. All the evidence goes to show that the infection is, as a rule, obtained by sleeping in a house containing infected persons for a longer or shorter time, in some cases only for a day or two. Moreover, the plan of moving the village to a new site appeared to have a distinctly good effect in lessening the disease when occasionally resorted to by the people themselves, so that I thought the infection might possibly pass through the soil. It was on the knowledge of the infection being largely a house one that I based the prophylactic measures which proved so successful long before the parasite of kala-azar was discovered, but now that we possess much more definite information regarding the true pathology of the disease it will be best to describe the life history of the protozoal organism of kala-azar before taking up the important practical question of prophylaxis, as the latter will thus be rendered more definite.

### THE PARASITE OF KALA-AZAR AND ITS DISTRIBUTION IN THE HUMAN BODY.

The parasite of kala-azar was independently found by more than one observer, but to W. B. Leishman belongs the credit of having had the courage first to describe it two and a half years after he had detected it, as probably a degenerate stage of a human trypanosoma, not very long after that organism had been found in a fever in Africa by the late Dr. J. E. Dutton, while Rose Bradford and Plimmer had previously described a form of the trypanosoma Brucei similar to the bodies which Leishman found. As soon as Leishman's paper reached India C. Donovan recorded that he had independently observed the same bodies in the spleens of patients dying from prolonged fevers in Madras one month before Leishman's note was published, and as he was able to find them in fresh spleen blood obtained by puncturing that organ during life he was able to disprove Leishman's suggestion that they were degenerate trypanosomes, for the flagellate form of the organism has never been found in the human system. Laveran and Mesnil, after examining specimens sent by Donovan, concluded that the organism was a piroplasma, while Dr. J. H. Wright of Boston at the end of 1903 described similar bodies to those of Leishman and Donovan in a form of chronic ulceration met with in the Punjab known as Delhi boil, in which D. D. Cunningham as early as 1885 had described the aggregations of these peculiar bodies. As kala-azar is unknown in the Punjab there is every reason to believe that the parasite of Delhi boil is quite a distinct species from that of the Assam fever.

In 1896 I had stained smears of kala-azar spleens with aniline dyes without being able to distinguish these bodies, which are not well brought out by them, while Romanowsky's stain and its numerous modifications had not then come into general use, and I mainly used fresh unstained films, as then advised by Sir Patrick Manson, for searching for malarial and other protozoal parasites. The papers just referred to appeared while I was on leave in England, and I quickly realised, as was also suggested by Donovan, Ross, and others, that if many of the cases previously known as "malarial cachexia" were in reality caused by the new parasite, then kala-azar of Assam must also be produced by it, for I had

[1] Lectures I. and II. were published in THE LANCET of Feb. 23rd (p. 486) and March 2nd (p. 568), 1907, respectively.

shown in my report that the Assam outbreak was but an epidemic form of the so-called "malarial cachexia." On returning to India at the end of 1903 I obtained some slides of spleen blood of kala-azar patients from my friend Mr. J. Dodds Price, and readily found the new parasite in them, as well as in several cases of the chronic spleen fever of Dinajpur which were evidently the sporadic form of the same disease. At about the same time Dr. C. A. Bentley independently found the same parasite in kala-azar and published his observations shortly before my own appeared in print. Other cases in Dinajpur with large spleens following chronic fever showed only malarial parasites in their spleen blood, and I found it impossible at a single clinical examination to differentiate between the two forms of the disease, although subsequently able to do so by the blood changes described in my last lecture. It is not therefore surprising that kala-azar has been so long confounded with chronic forms of malarial fever, and the discovery of the new parasite has done more towards clearing up the fevers of Bengal and some other parts of India than anything since Laveran's description of the parasites of malaria. Over a year later S. P. James also recorded having found the Leishman-Donovan bodies in 67 out of 68 cases of kala-azar, and gave some valuable clinical information regarding the differentiation of this disease from chronic malaria, the discovery of the new parasite having furnished the key to the problem which a century of clinical observations had been unable to unlock.

*Distribution of the parasite in the human body.*—It soon became apparent from the observations of Manson and Low, Ross, and especially of Christophers (who had been placed on special duty by the Government of India to work at the subject in Madras), that the organisms may be found in practically every organ of the body in variable numbers, although most numerous in the spleen, the bone marrow and the liver. They were also observed occasionally in the mesenteric glands and rarely in ulcers in the intestines, and both Manson and Christophers suggested that they might escape in the fæces and so reach water through which reinfection might take place. When a little later I discovered the flagellate form of the parasite, Bentley announced that he found trypanosomes more commonly in fish from near kala-azar infected lines than elsewhere, and suggested that they were a stage of the human parasite, so I made some observations in the same year to test this hypothesis in Nowgong, but was unable to confirm his statements as far as that district was concerned.

Now Christophers's microscopical studies showed that the parasites multiplied mainly in the large endothelial or macrophagic cells of the spleen and bone marrow until the invaded cells bulge into the lumen of the vessels. During the operation of spleen puncture those containing the largest parasites rupture most readily and the organisms thus obtained are nearly all the larger capsulated ones in contrast with the minute ones which are most numerous in a spleen smear made post mortem. A similar rupture of the distended endothelial cells must also frequently take place naturally in the body and so allow of the entrance of the parasite into the circulating blood and its distribution to all parts of the body, a hypothesis which also explains the large number of the organisms found in just those organs where the malarial parasites also accumulate—namely, the spleen, the bone marrow, and the liver; while I have also several times found them in the brain.

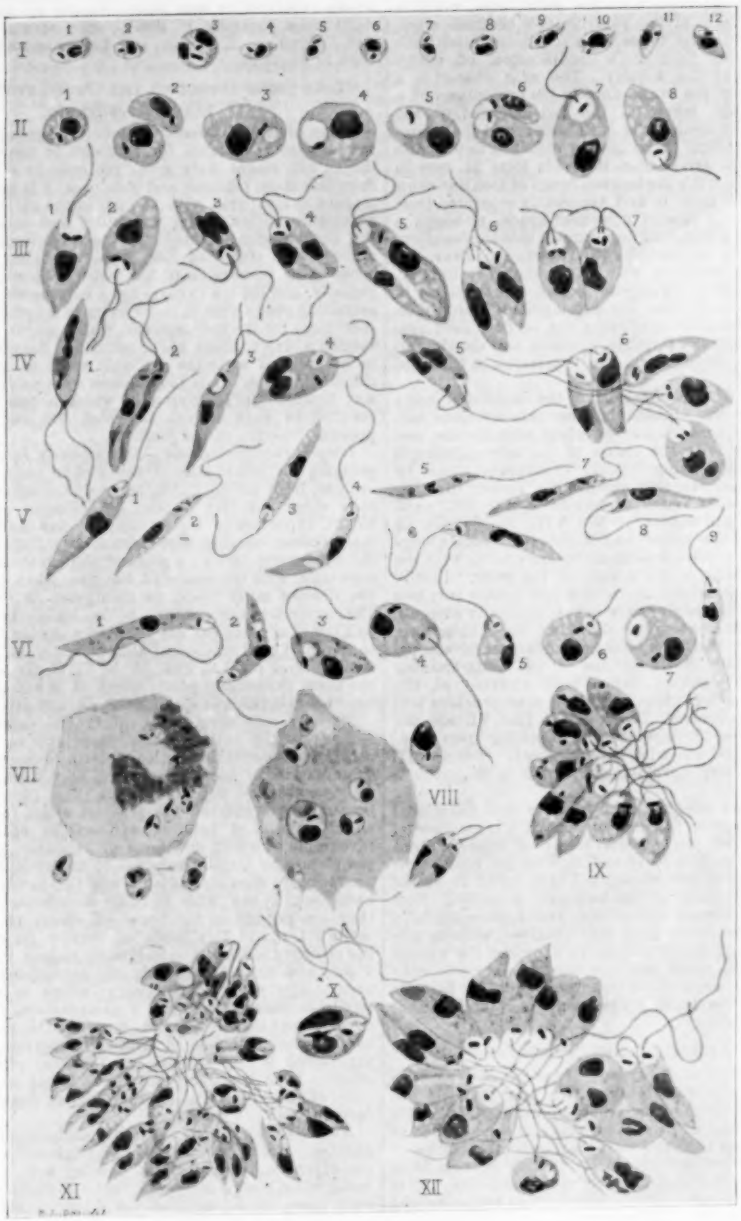
This leads me to the consideration of the frequency of the parasite in the peripheral blood, for it was the supposed great rarity of such incidence which gave rise to the theory of its escape from the large bowel as the source of infection which was so generally held before my discovery of the flagellated stage of the parasite. Yet Donovan, Christophers, and James have all met with the parasites within the leucocytes, chiefly in the polynuclears, although no one has confirmed the statements of Donovan, Laveran, and Mesnil that they may be seen within the red corpuscles, other workers considering that they are only rarely seen living on the surfaces of the red discs. Recently Donovan has reported that he has found the parasites in the peripheral blood of 75 per cent. of his patients, while W. S Patton, now on special duty in Madras, informs me that he detected them in a still larger proportion of specially selected advanced cases. Donovan stated that they are most easily found during high fever, but I have been unable to confirm this, while it is also contrary to Patton's experience, who finds that they are commonest in the later stages of the disease, so that it is doubtful if a microscopical examination of the finger blood for the parasites will prove of much diagnostic value in the difficult early stages of the disease. In a few cases I have tried the plan of quickly centrifuging for one minute two or three cubic centimetres of vein blood to separate the majority of the red corpuscles and then making slides of the blood plates and leucocytes after a second longer centrifugation without much success, but I think it is worthy of further trial as it may prove preferable to the sometimes dangerous spleen puncture as a diagnostic method. However this may be, it is now quite clear that the parasites are at least present in the circulating blood in large numbers in most advanced cases, quite sufficiently so readily to allow of their entering the stomach of any blood-sucking insect which might form a suitable host for its further development.

### THE CULTIVATION AND DEVELOPMENT OF THE FLAGELLATED STAGE OF THE PARASITE.

Up to July, 1904, the only stage of the parasite known was the small oval body of about the size of a blood plate, with a rounded macronucleus and a smaller rod-shaped micronucleus or centrosome, such as are shown in the first line of the plate. These multiplied by division so that in spleen smears a number of very small bodies may be seen in a single cell with no very definite capsule, but recognisable by the double nucleus, or numbers of them might be found in a hazy material, first taken for a zooglea mass, but now known to be but the protoplasm of the cell in which they were growing. It is not surprising, then, that there was much speculation as to the precise class of protozoa to which this organism belonged, suggestions varying from degenerated trypanosoma of Leishman, piroplasma of Donovan and Laveran, spores of a mirosporidian of Christophers, and an entirely new genus which Ross proposed to call Leishmania-Donovani in honour of the two observers who first described the parasite, being put forward.

As it was clear that we could not expect to gain much further knowledge of the exact nature of the parasite until we learnt something of the extra-corporeal stages and the discovery of such further portions of its life history was alone likely to throw valuable light on the mode of infection of the disease it produces, I set to work on these lines as soon as possible after my return to India and was fortunate enough to obtain important results. The method employed was to obtain blood containing the organism by means of spleen puncture and to add to it about one cubic centimetre of sterile salt solution, containing a little citrate of soda to prevent the blood clotting, and to examine it frequently to see what became of the parasites. My first attempts were made at blood heat, with the result that they all died out in a day or two, as other workers had also found. Being struck with the resemblance of the macro- and micronucleus of the parasite to those of trypanosomes, just as Leishman had been, and remembering that Laveran and Mesnil had succeeded in keeping the latter organism alive for a much longer time at a low temperature than at blood heat, I next tried incubating the citrated blood at about 27° C. and found that in this way they lived, or at least retained their staining properties, for several days, and, what is more, they appeared to multiply considerably, many dividing forms being present, but as yet without any other material alteration. On next reducing the temperature to about 22° C. (an ice incubator having to be used during most of the year in Calcutta for this purpose) I was soon rewarded by finding that not only did the parasites unquestionably multiply rapidly, but they also increased in size and developed a blue-staining protoplasm, and after a time the further development of flagellated forms took place, which were actively motile.

The different stages of this remarkable development are shown in the diagram, which has been made from a plate published in a paper in the Proceedings of the Royal Society last year, all the forms in which have been accurately drawn to the same scale with a camera lucida, thus illustrating the extraordinary increase in the size of the parasite as well as in its numbers. Whereas the human stage of the parasite appears to be no larger than a blood plate and requires careful search with an oil immersion lens for its detection, yet the large rosettes shown in the lower part of the diagram can readily be seen as a stained mass or in unstained specimens as a lighter circular area among the red corpuscles with a half-inch lens. The form in which the parasite is found in the human body is shown in the first line of the plate. The




DESCRIPTION OF PLATE.

Magnification of all the figures 1500 diameters. (From the Proceedings of the Royal Society, B. Vol. LXXVII., Plate 7.)

Fig. I., Undeveloped Leishman-Donovan bodies from spleen puncture film. Fig. II., Early stages of development, from two days' culture in acidified citrated blood; 1 and 2, body and macronucleus enlarged; 3 and 4, first appearance of eosin body; 5 and 6, elongation and subdivision; 7 and 8 first appearance of flagellum. Fig. III., Stages of division of the early flagellated forms. Fig. IV., Double long swimming forms. Fig V. Fully developed long, free, active single cells. Fig. VI., Degenerate forms. Fig. VII., Undeveloped forms in a white corpuscle. Fig. VIII., Early stages of development in a degenerating white corpuscle. Fig. IX., Stage in the formation of rosette. Fig. X., Separated flagella with micronuclei attached. Fig. XI., Rosette breaking up into free forms. Fig. XII., Small complete rosette.

earliest stages of this development, which are shown in the second line of the plate, consist in an enlargement of the macronucleus without any corresponding change in the micronucleus, which remains a small rod throughout the whole process. At the same time the protoplasm, which is clear in the spleen form of the parasite, now becomes much increased in quantity and takes on a blue colouration with Romanowsky's stain, Leishman's modification of which was used throughout this inquiry. The next change is a curious one—namely, the appearance in the protoplasm of a rounded mass which takes on the red element of the stain, so may well be termed the eosin body, and the micronucleus is always found to be closely attached to it, while the flagellum always arises from it. This form is seen in Nos. 3 to 5 of line II., while the last two forms of that line show the flagellum arising from it and apparently separated from the micronucleus by a narrow unstained space, although a study of degenerating flagellate forms proves that the flagellum is really organically connected with the micronucleus, for it comes away from the body with it, as shown in form X. This flagellated stage rarely appears before the third day in successful cultures, and when the development is carried on under the most favourable conditions (to be described presently) they are found in enormous numbers and showing all the stages of subdivision, which are illustrated in the third line of the diagram.

In this process of multiplication of the flagellated forms the first change is the division of the micronucleus and flagellum into two, next the macronucleus also divides, and then a line appears down the centre of the body splitting it into two, the process being quickly commenced again by both the new forms. In this manner the rapidly dividing forms push each other round, as shown in Fig. IX., until they form a complete rosette of No. XII., the flagella all pointing in towards the centre, and in this stage such groups can readily be seen in fresh specimens by low powers with the flagella actively waving in the middle of the mass. Lastly, the individual forms, which up to now are mostly only two or three times as long as they are broad, gradually elongate out and begin to break away, as shown in No. XI., to form single exceedingly active organisms, which when stained have the appearance shown in line V, the eosin-staining micronucleus and flagellum being both situated at the anterior end of the organism, while the macronucleus still remains about the centre. The forms in line VI. are the retrogressive stages of degeneration resulting from contamination of the culture with staphylococci. Forms VII. and VIII. show early development within a polynuclear leucocyte.

For a long time I was in doubt whether this flagellated form was but a stage in the development of a trypanosome, similar to those of the culture forms of that of bird trypanosomes obtained by Novy and McNeal on blood agar medium—a method of culture which I have failed to obtain success with in any stage of the kala-azar parasites. Now that extremely numerous, very active, and apparently fully developed flagellate forms have been obtained, without any tendency for the micronucleus even to approach the macronucleus being seen, much less any sign of an undulating membrane, I have come to the conclusion that the parasite is not a partially developed trypanosome but another kind of flagellated organism.

## THE NATURE OF THE PARASITE.

The discovery of the flagellated stage of the parasite affords much help in classifying it, for now that the life history of the piroplasma canis has been worked out and it is known that it has no flagellated stage, the suggestion of Laveran and Mesnil that the kala-azar parasite belongs to that genus may be put out of court. It also appears from what has just been said that it is not a trypanosome, and it appeared to me to be more closely allied to the herpetomonas than to any other known flagellate protozoon. As repeatedly sending specimens to English zoologists failed to elicit any opinion on the point I forwarded some to the late Professor Schaudinn, unfortunately too late to obtain an answer before his lamented death, but I received an early reply from Dr. Hartmann of the Hamburg School of Tropical Medicine, which was to the effect that the organism differs from all hitherto known flagellates; so it may most conveniently be named the Leishmania-Donovani, as suggested by Ross, while he also informed me this was the opinion of Professor Schaudinn, so it may safely be adopted.

Such a startling discovery as that just related necessarily needed confirmation before being generally accepted, but this was soon supplied by Assistant-Surgeon G. C. Chatterjee working in my own laboratory, and some three months later independently by Christophers in Madras (the publication of whose observations was much delayed by the Government regulations applying to him), while several months later still J. Statham, R.A.M.C., and Leishman also confirmed my work in England.

## CONDITIONS AFFECTING THE DEVELOPMENT OF THE FLAGELLATE STAGE.

In my earlier cultures the amount of development obtained was extremely variable, for although in nearly all of them the earlier stages were seen, yet only in a 1 in 6 was the flagellate stage reached, and then usually it was very scantily present as compared with the enormous numbers of slightly developed bodies. This variability and incompleteness of the development pointed to the experimental conditions under which they had been obtained being still far from those most favourable to the extra corporeal stage of the parasite, and led me to carry out a long series of observations extending over a year in order to try to ascertain the optimum conditions for the development, which might be expected to furnish a clue to those under which the flagellate forms exist in nature and so to the probable mode of infection of the disease it causes. Over 100 cultures were made before success was obtained, in the course of which a number of negative conclusions were arrived at which are not without some practical bearing on the problem.

*Temperature limitations.*—It was early found that a temperature far below that of the human body is essential to success, from 20° to 22° C. being the optimum one, while I have never got very marked development above 25° C., or 77° F., exposures to higher temperatures than this for but a few minutes causing rapid death and degeneration of all the developing forms; a point of the greatest importance in connexion with the season of the year when the infection of the disease takes place, as mentioned in my last lecture. The minimum temperature below which the development will not take place has not yet been absolutely settled, owing to the short cold season in Calcutta, but so far as my observations go they point to from 15° to 17° C. (or about 60° F.) as the lower favourable point, which is in accordance with the seasonal and climatic distribution already given.

*Sterility.*—Another point of crucial importance is the sterility of the culture tubes, especially as regards micrococci, contamination with bacteria during the frequent examinations of the tubes having been always followed by rapid death and degeneration of these protozoal parasites. Staphylococci exerted the greatest effect in this direction, which affords a possible explanation of the occasional favourable effect on the fever of kala-azar following septic complications already referred to in my last lecture. This necessity for sterility explains why the parasites have never been found in the fæces in those occasional cases in which they are present in the bases of ulcers in the intestine, while it renders this mode of escape from the body as the ordinary source of infection extremely improbable. As I was also unable to obtain any development whatever in even sterile water, this agency, which is probably never sterile in nature when at a temperature suitable to the development of the parasite, may also be put out of court as the common vehicle of infection, especially as all clinical experience is also against it. Different strengths of salt solution were tried and only showed that somewhere about that of the blood or slightly higher degrees were most favourable to the process.

*Anaerobic conditions.*—An atmosphere of hydrogen or nitrogen gas prevented the development without killing the organism, which might develop well on the cultures being again placed under ordinary atmospherical conditions, once more indicating that the intestinal canal is unfavourable for the process. On the other hand, an atmosphere of oxygen gas in excess did not appear to affect the development.

*Acid medium.*—All the negative results just mentioned, taken together with a number of facts regarding the conditions influencing the spread of the disease ascertained during its study in Assam, led me to the conclusion that the mode of the infection must be through some biting insect. As the mosquito seemed to be an unlikely agency on account of the strictness with which the infection appeared to be limited to houses containing cases of the disease, I strongly suspected that pest of Indian life, the homely bed bug, to

be the culprit. During some earlier unpublished examinations of the contents of the stomachs of bugs from the beds of plague patients for bacteria I had been struck by the frequency with which the contents were absolutely sterile, a somewhat unexpected result. I therefore tested the reaction of the fluid in the stomachs of these insects after sucking human blood and found it to be distinctly acid, the secretions of the organ being evidently sufficient to neutralise the natural alkalinity of the imbibed blood. This fact led me to try the addition of a drop or two of weak sterile citric acid solution to the infected citrated human spleen blood, and at last my patience was rewarded by obtaining a far more abundant and uniformly complete development of active flagellated forms than I had ever seen before in scores of cultures, the rosette-like groups being especially abundant and active. What was most striking and important was the fact that, instead of the vast majority of the organisms showing little or no development while but very few reached the flagellate stage in the previous alkaline blood cultures, in the acidified medium all the organisms appeared to develop uniformly, so that when about the third day the flagella began to be seen it was found that the vast majority of the organisms, which were multiplying with extreme rapidity, had already reached this advanced degree, and a day or two later few or none remained in the original small undeveloped stage. It was clear, then, that this acidified sterile fluid blood medium kept at a temperature of about from 20° to 22° C. was extremely favourable to the growth of the extra-corporeal stage of the organism and might with a very great degree of probability be relied on to furnish the long-wanted key to the most likely intermediate host of the parasite. All the developmental forms in the diagram have been drawn from one of these acid cultures.

### FEEDING EXPERIMENTS.

The success of the acidified blood as a culture medium having now greatly strengthened my suspicion that the bed bug is the carrier of the infection of kala-azar, I next tried a variety of methods to induce these insects to swallow infected human blood placed in sterile capsules of different kinds, but without success, as they refused to be tempted to suck the blood. In order to ascertain if the stomach of these particular insects was likely to prove suitable for the development the plan was next adopted of mixing human spleen blood containing the organisms with about an equal quantity of the fluid contained in the stomachs of these insects after feeding on human blood in sterile capillary tubes, and I succeeded in obtaining the development of fully flagellated forms at the suitable temperature, so that it only remained to find similar forms in these insects after feeding on kala-azar subjects to complete the proof that they may actually carry the infection as far as is possible to do so as long as no animal is known which takes it, for it would not be justifiable to try to infect human subjects with such a deadly disease, and hitherto all attempts to inoculate the ordinary laboratory animals or even monkeys have failed. As far as I know the anthropoid apes have not been experimented upon owing to the difficulty and expense of obtaining them, one orang-outang which I got for the purpose having died too soon to enable this point to be settled.

As sufficiently numerous feeding experiments with such insects to be of any value require much time I spent all the leave I could obtain when the temperature conditions were favourable in Assam last year for this purpose, but although I examined blood from the stomachs of over 200 bugs fed on kala-azar patients with low powers in a fresh condition to look for active flagellate forms I had met with no success when I had to stop on account of my eyes, and have only been able to find time since to examine a few of the stained slides then made. This failure was disappointing, but the time available for the work was so short that I did not regard the negative result as in any way invalidating my theory, and was therefore much pleased to learn several months later that Captain Patton had been placed on special duty to work on similar lines, and still more when it was announced in the *Indian Medical Gazette* that he had obtained some development of the kala-azar parasites in the stomachs of bed bugs, but not in those of mosquitoes, ticks (with which Christophers had previously obtained negative results), or lice. While on a visit to Madras during the last Christmas holidays Captain Patton kindly showed me his specimens, which clearly contained the early stages of the development with the appearance of the eosin body and in one of his drawings a short flagellum was also apparent. They struck me as being very similar to the scanty development I obtained before using acidified media and gave me the impression that the conditions were not those most favourable to the process and on inquiry I found that attention had not been paid to obtaining the most favourable temperature for the development, so I urged him to do as many feeding experiments as possible during the then more favourable cold season, when the optimum temperature could be obtained. The result has fully substantiated my opinion, for within three weeks Captain Patton wrote to me, "I have got the complete cycle of the parasite up to completely developed flagellates," and added, "There is no shadow of doubt that the bed bug transmits the disease."

Much doubtless remains to be done in this direction in order to ascertain exactly in what form the parasite is again inoculated into the human subject. But the long time during which the infection clings to houses points to the possibility of its being transmitted through the progeny of the first affected bugs, just as occurs in the case of the piroplasma of cattle and dogs, so that the ovaries and salivary glands should be carefully examined in fed insects for further stages of the parasite. Nevertheless, our knowledge of the life history of the kala-azar organisms is now sufficiently known to enable the facts to be made practical use of in the prophylaxis of the disease, which is the last portion of my subject remaining to be considered.

### THE PROPHYLAXIS OF KALA-AZAR.

I have already mentioned the partial success of moving infected villages to new sites but a short distance away, which, taken with the strong evidence I collected in 1897 as to the infection being a house one, appeared to me to afford the most promising basis for preventive measures. Finding also that over a year before I went to Assam Mr. Dodds Price, suspecting the disease to be infectious, had placed 150 out of 200 freshly imported coolies in newly built lines of houses, while the remaining 50 had to be accommodated in infected lines for want of room, I got him to work out the results of this measure. It was thus ascertained that although none of the 150 in the new lines had suffered from kala-azar during two years they had been on this badly infected tea garden, yet no less than eight, or 16 per cent., of those placed in the old lines were already dead of the disease, and that, too, in spite of the fact that the new lines went but 300 yards from the old ones, a distance insufficient to prevent the spread of malaria through the agency of mosquitoes.

This very important result obtained by Mr. Price encouraged me to suggest the further step of moving all the healthy people out of infected lines to houses on a new site, no person, however, being taken from an infected hut in consequence of the impossibility, at that time, of differentiating the early stages of kala-azar from ordinary malarial fever. This plan was carried out by Mr. Price in the case of a coolie line which was so badly infected that no less than 144 out of 240 souls were either actually suffering from kala-azar or had cases in their households, leaving only 96 who could be moved to the new site, five of whom were very shortly afterwards sent back on account of their developing fever. A large number of fresh coolies were also drafted into these new lines, so that 18 months later it contained 416 souls, among whom not a single case of kala-azar had occurred—a statement which happily remains true at the present time, ten years after they were occupied. In marked contrast with this result is the fact that of 60 coolies who refused to move out of the infected lines no less than 20, or one-third, were attacked within the 18 months, and a year ago they had nearly all been carried off by the disease, although their houses were only 400 yards from the new ones which remained healthy. This experiment was so conclusive that it has since been often repeated with uniformly good results, so that the disease is no longer as dreaded as it used to be by tea-planters in the Nowgong district. In slightly infected lines only the affected households were segregated and their houses were burnt, this measure being also of value, although less effective than the former one. It is only in the few remaining old lines that the infection lingers at the present time, and I am glad of this opportunity of saying that Mr. Price deserves the greatest possible credit for initiating and successfully carrying out these measures, especially as he has been too modest to claim it himself. It is not too much to say that it is now certain that this awful scourge can be robbed of most of its terrors whenever it is possible fully to carry out segregation measures, as on tea

estates, while their success has encouraged the application of the same principles in dealing with the spread in villages as far as they are practicable in that case.

### MEASURES TO CHECK THE SPREAD OF KALA-AZAR IN THE VILLAGES.

It was not possible to carry out such complete measures as the above in the infected villages, but the following recommendations of mine proved successful in preventing the spread of the disease into the eastern half of the Brahmaputra valley as already described. In the first place, a pamphlet in the vernacular was widely distributed explaining in simple language the manner in which the infection was spread and the precautions necessary to prevent its introduction into unaffected places, and by thus putting the people on their guard against the insidious invasion of the disease they were often enabled to keep it at bay without having to learn the lesson by bitter experience. In the second place, assistance was given by the Government to already infected villages to remove to a new site, the infected persons being as far as possible accommodated in a separate place.

It may, then, be fairly claimed that much practical good resulted from my inquiries of 1896–97, both in the prevention of the further spread of the disease up the Assam valley and also in its being practically stamped out of the Nowgong tea gardens, and it is worthy of note that all this was accomplished before the exact nature of the disease was ascertained by the discovery of the parasite in 1903. Moreover, the success of the measures based on the theory that the disease was essentially a house one is readily accounted for by the bug theory of infection which has now received such strong experimental support.

### THE DESTRUCTION OF BED BUGS AS A PROPHYLACTIC MEASURE.

Just a year ago, several months before Captain Patton's successful feeding experiments, I arranged with Mr. Price for him to try the effect of repeated attempts to destroy all forms of insect life in the infected houses and those immediately around them in a coolie line[2] in which cases of kala-azar continued to arise in each cold weather period, leaving a second slightly infected one as a control. The houses were fumigated with burning sulphur, the beds were thoroughly washed with strong carbolic lotion, the clothes were either boiled in the same solution or destroyed, while the blankets were all burnt as being most likely to harbour bugs, new clothes and blankets being supplied. In the line which was thus treated six cases had occurred during the cold season of 1905–06, all in adjoining houses, and the disease seemed to be slowly extending, so that Mr. Price considered this spot to be "a regular hot-bed of kala-azar."

I have just received the results of this experiment up to the beginning of February, thus including three-fifths of the cold season, when fresh cases of kala-azar mostly appear, and so far no coolie has been attacked in the disinfected lines. Satisfactory as this result is, it must be admitted that it is not quite conclusive, because in the control slightly infected coolie line, which was not disinfected, there have also been no fresh cases of the disease, although this is not altogether surprising, as since last year all the cases in this control line have either died or recovered, leaving no foci in it from which infection was likely to take place, so that, as Mr. Price remarks in his letter, new cases would have been much more likely to have occurred in the disinfected than in the untreated lines.

The result of this effort to destroy bed bugs in the houses infected with kala-azar is, at any rate, most encouraging, and in view of Captain Patton having now proved that the parasite can develop into the flagellate stage in the stomachs of bed bugs fed on kala-azar patients and kept at the right temperature it may safely be laid down that somewhat similar disinfecting operations to those just mentioned should be carried out in all houses from which kala-azar patients are received, for this measure may be expected to do much towards preventing the disease running through the families of poor Europeans in the way I have described, and the terrible mortality in children in particular may be greatly lessened. By these means it is not too much to hope that as much may be done to reduce the present terrible loss of life due to the sporadic form of kala-azar in Bengal and Madras, at any rate among Europeans, as has already been accomplished in limiting the spread of the epidemic in Assam and stamping it out in coolie lines; and thus the knowledge regarding the life history of the parasite obtained by the investigations of the last four years may supplement and extend the scope of the prophylactic measures previously put into successful operation to stem the progress of the Assam epidemic of kala-azar.

I have now completed my task, and although I have necessarily had to dwell a good deal on my own work, especially when treating of the epidemiological and clinical side of the subject, on account of the very exceptional opportunities which I have enjoyed of studying those aspects of the question, I have also endeavoured to do full justice to the invaluable work of the numerous observers who have added so much to our knowledge; and in concluding I wish to emphasise the fact that the great advances made during the last few years in our knowledge of the most terrible of all tropical diseases afford a pleasing instance of the recent increased interest in tropical affections leading to combined work in different places by a number of medical men, all happily of British nationality.

[2] By a coolie line is meant a collection of rows of houses in which the garden coolies reside.

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ABSTRACT OF

# The Morison Lectures

ON

# INSANITY, WITH SPECIAL REFERENCE TO PROGNOSIS.

*Delivered before the Royal College of Physicians of Edinburgh on Jan. 28th and 30th and Feb. 1st, 1907,*

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## LECTURE II.[1]

*Delivered on Jan. 30th.*

I SUBMIT to-day a sheaf of tables and charts, which contain the various observations to which I desire to direct attention, and it will be observed that all cases of gross pathological nature have been deducted and that the remaining cases of obscure pathology only are tabulated.

First of all, cases in which alcoholism had a part in the etiology of insanity are set aside, whether these were cases in which the toxic effects of alcohol were symptomatic of the underlying malady or truly causative. The prognosis of alcoholism is indefinite and generally unfavourable. These persons are deeply affected by hereditary predisposition to abnormal conditions. Of 110 alcoholic certified and voluntary cases investigated, nearly 43 per cent. were hereditarily predisposed to insanity, and nearly 23 per cent. to alcoholism. The total neuropathic heredity was 70 per cent. I am not discussing drunkenness apart from insanity, regarding which my opinions have been repeatedly and energetically expressed—that it is a vice to be reformed rather than a disease to be cured. The insane drunkards are a class apart.

General paralysis is a disease which is practically incurable and comparatively rapid in its course. Out of 40 cases 23 were undoubtedly syphilitic and 14 were alcoholic. There is in our records presumptive evidence of syphilis in seven other cases. My experience leads me to believe that the hereditary factor is of importance in general paralysis. It used to be regarded as not a hereditary disease, an opinion which must be revised if my experience is general, for in reference to these 40 cases of general paralysis the heredity of insanity finds expression ten times, eccentricity four times, neuroses 12 times, and alcoholism 14 times. Rheumatism, gout, and tuberculosis are also noted. There was a distinct neuropathic heredity in 32 cases.

Turning to the cases of epilepsy reported, it will be seen that they are few in number, and I must add that all do not represent the ordinary cases of epilepsy which crowd the wards of the great English county asylums. The cases of ordinary uncomplicated epilepsy only amount to five. 11

[1] Lecture I. was published in THE LANCET of March 2nd, 1907, p. 572. The lectures were illustrated by statistical tables, charts, and clinical observations.

were cases of alcoholic epilepsy, a condition implying such a degeneration of nervous elements as practically precludes the possibility of recovery. This is not an invariable result, however. These cases of epilepsy, then, whether obscure in origin or alcoholic or traumatic, are definitely of evil omen as regards prognosis. If the exhibition of bromides does not arrest the march of the morbid symptoms there is little hope that hospital treatment can do more than care for a disease which is progressive and fatal. It is interesting to note, however, that senile epilepsy in the insane has been resolved into two factors of the same nature as true epilepsy by Dr. John Turner—viz., an unstable condition of nerve cells and a condition of stasis or cerebral anæmia resulting from arterial disease, endarteritis obliterans. The thesis of his important paper just published is that the blood of epileptics is abnormal and characterised by a special tendency to intravascular clotting.

The group of coarse organic diseases of the brain need not detain us. The recovery of a patient so seriously damaged is a very rare occurrence. I can find but one instance on our records. 26 cases of traumatic origin are reported, as usual, mostly in men. I have included cases of insolation, where there was a probability of that cause having been effective. It is well known that no insane patient who has visited the tropics can be admitted to an asylum without a history of sunstroke. It is a facile explanation. Unfortunately I have not had a case suitable for operation, and my experience is that these traumatic cases are of the most serious import. Dr. Van Gieson investigated many of these in New York, where it is common to find a person stunned and senseless from a blow given by a piece of lead wrapped in flannel, which leaves no external mark whatever. He found it impossible, post mortem, to distinguish between a brain so injured and a case of insolation. The pathological changes were invariably those of early and widespread degeneration of the cortical cells. I have also deducted the class of idiots and imbeciles as persons who by early defect are absolutely incurable and of no special interest in this relation. I therefore begin with a consideration of 554 persons suffering from ordinary insanity, as distinguished from 255 of obvious pathological significance. Further, it will be observed that the incidence of these pathological cases bears heaviest on the male sex and illustrates the lower recovery rate and the higher death-rate for that sex. The particular incidence of alcoholism, general paralysis, epilepsy, organic brain disease, traumata, and even idiocy recorded here is by far more excessive in affecting men than women. I need not discuss the underlying reasons for this excess, it is a well-established fact, and, of course, broadly renders prognosis graver for men than for women.

I have been accustomed to classify all cases as *innate* or *acquired*, and also as affected by mental or physical stress. Naturally a case must be either innate or acquired, but if there be no evidence obtainable as to neuropathic heredity the entry is made under "Acquired." With regard to mental and physical stress, these are noted when apparently of some definite importance in etiology. Now severe mental strain, sudden or prolonged, is inevitably put forward as the cause of insanity in the history of every case in which it can be alleged. It is analogous to the similar assertion as to sunstroke in the case of patients with a tropical history. Is it really effective in the production of mental disorder? I think not. I have therefore critically examined the cases in which mental stress was alleged, and find that the almost inevitable complement to mental stress is innate or congenital defect. If a person is entered under mental stress he is almost inevitably entered under innate. 64 instances of this combination are recorded. On the other hand, the combination of acquired insanity, with mental stress alone, is extremely rare. Three cases are recorded, and they are so recorded before my appointment to Murray's Asylum. They may be briefly mentioned:—One a case of adolescent dementia, who developed epilepsy in maturity and died in the status epilepticus; one a case of adolescent melancholia, who remains resident in a condition of senile dementia; and one a case of ordinary melancholia at the age of 30 years, who has been lost sight of. They rather tend to support my conclusion. It is evident that final results tend to show that the innate or hereditary cases recover in fair proportion, although they are more subject to relapse than the acquired. This has been widely recognised, but I do not know that the heavier death-rate among the acquired cases has been shown before. It may be that the more severe causal factors requisite to issue in insanity in persons not congenitally predisposed find expression in this way. The recovery-rates of melancholia are 33·79 and 13·51 per cent. having regard to recovery and relapsed cases in innate cases, and 28·13, and 7 81 per cent. in acquired cases. On the other hand, the recovery-rates of mania are 31·16 and 24·64 per cent. for innate cases, and 39·62 and 13·21 per cent. for relapsed cases.

We may now glance at the *age period* in relation to *final results*. With regard to the group of melancholias, the adolescents are in a marked minority, while the period of maturity exceeds that of the climacteric—the absolute numbers being 40, 97, and 75, The position is reversed for cases of mania, by the numbers, 83, 78, and 69. The percentage of recoveries from melancholia tends to diminish as the age periods increase, a condition of affairs directly the opposite in reference to mania. The tendency in regard to all the death-rates is towards an increase with age, the adolescent naturally showing the lowest figures. I infer that the slight mental reduction of melancholia in youth is eminently curable, for if we add the recoveries and relapses the total is 62 per cent.; but the deeper reduction of mania, even omitting the development of dementia, is less likely to end favourably by 11 pe rcent. The table, however, relating to the more recent cases of adolescent insanity cannot be considered complete, the period having ended with 1904, and the results having been only carried down two years later.

It was formerly thought that the association of tubercle with insanity was particularly fatal in results. I have therefore worked out the percentages of neuropathic tuberculosis, as follows, in 25 persons: recovered, 32 per cent.; unrecovered, 32 per cent.; and died, 36 per cent. Although these are small numbers and therefore liable to a wide margin of error, I believe that they will be found approximately correct for modern practice. In a period of overcrowding and defective hygienic conditions 13 per cent. of all the deaths in the Perth Royal Asylum were due to tuberculosis, nor did that represent the whole incidence of the disease, for post-mortem examinations reveal a much larger proportion in modern asylum practice. In the period under review the percentage of these deaths was little more than half—viz., 7 per cent.

Considering the incidence of *occupation and environment* with reference to *heredity* and *results of treatment*, the stress of life in towns is often unfavourably compared with the idyllic conditions of the country. First of all, it is difficult to decide how to place many of these patients. It seemed reasonable to divide urban and rural dwellers in accordance with the size of the towns, a population of some 5000 being reckoned rural. The usual place of residence for some years previous to admission was regarded as fixing the classification. On that principle 456 might be considered as of urban extraction and 353 rural. In the former, 73 per cent. were of neuropathic heredity and 27 were acquired cases. In the rural class 70 per cent. were neuropathic and 30 per cent. were acquired. That represents no great difference and no marked evil effect of town life as regards heredity. The towns, of course, are steadily recruited from the country, but if neuropathic disorders are degenerate the untoward influence is nearly as effective in the one as the other. Of course, I am not dealing with the industrial class but with a comparatively stable class, which has apparently attained its maximum ratio to the general population and at least for some years has shown no tendency to increase.

When we turn to the nature of the mental disorder, whether ordinary or pathological, we find that these stand in the proportion of 70 to 30 per cent. in urban cases and 81 to 19 per cent. in rural cases. The untoward side of urban environment in thus revealed. The effective soil for the germination of insanity was nearly equal, while the evolution of the actual insanity was aggravated by the environment, resulting in a difference of 3 per cent. in the death-rate.

On general principles I have endeavoured to ascertain and record the earliest symptoms of somatic disturbances heralding insanity. I may say at once and finally that in every case these somatic disturbances can be clearly recognised and recorded if one is dealing with persons of ordinary intelligence who have been in close relations with the patient. They are well-known—general malaise, gastric and intestinal disturbance, sleeplessness, irritability, inability to go about the ordinary affairs of life, and so on. The fear of impending madness is quite common, especially in general paralysis,

but it is soon masked by other mental manifestations, and the feeling of *bien être* is never a prodrome but a declared symptom of insanity.

It is evident that the maximal elevations for onset of insanity on the chart are for April, June, and December, showing a singular abrupt fall in May and a more prolonged fall towards the autumnal months. These 913 cases have, of course, been spread over a period of 25 years and there does not seem to be reason to regard the results as untrustworthy. The fall in May and the rise in June is inexplicable, especially when it is noted that the charts of recoveries and deaths show the same regression. Sir Arthur Mitchell has kindly constructed a chart of incidence on onset for me, which shows a more equable course; for the influence of the preceding and succeeding months of any one month are taken into account. The average is carried out instead of the absolute numbers. The result is a period of greater and lesser intensity in winter and summer respectively, and I believe that this gives a more adequate idea of the total incidence as regards seasons.

Chart XI. is designed to show the *age on first attack*, arranged in quinquennial periods. The curve rises rapidly from ages less than 20 years to the maximum on the completion of adolescence. From that point it falls with two short increases to the eventual minimum. These regressions mark the climacteric periods of women and men when the curves for the sexes are separately studied. It is certainly disquieting to find that out of 809 persons admitted no fewer than 195 had already suffered previous attacks. It is good reason for a thorough revision of our methods, for a closer study of the early symptoms, and a revisal of treatment.

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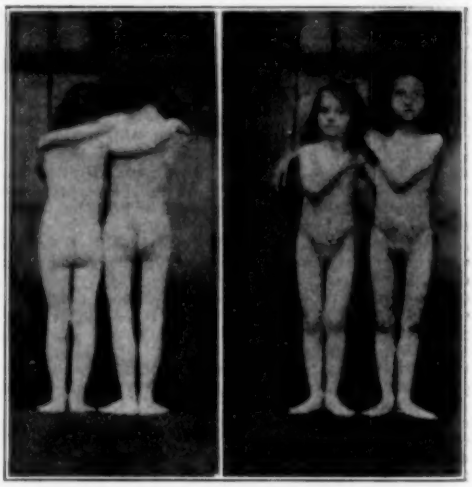

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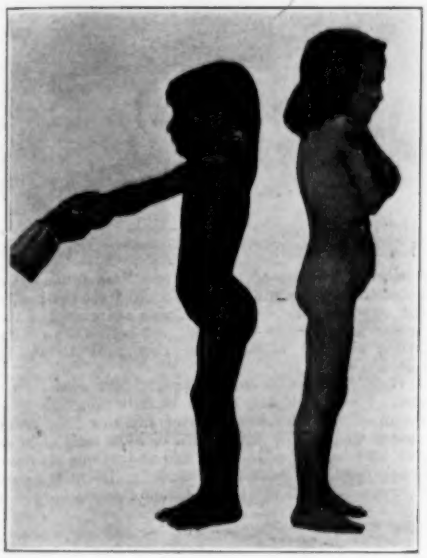

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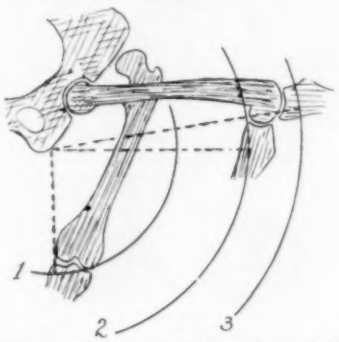


A diagram showing by the radii of the circles—at 1, the length of the hamstring muscles before operation; at 2, the length of the same immediately after operation; and at 3, the length when the power of extending the knee has been obtained by regular exercises.

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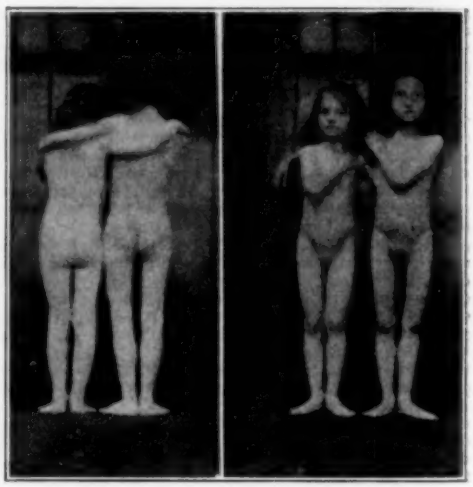

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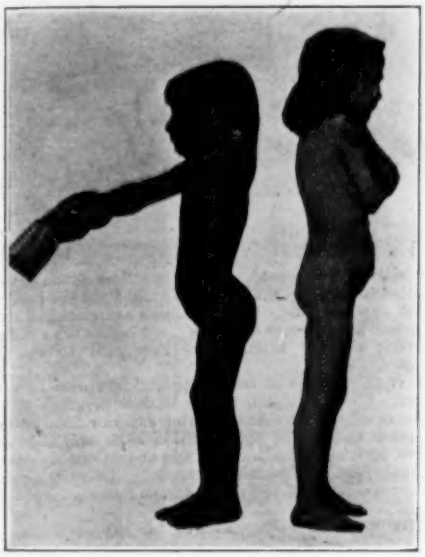

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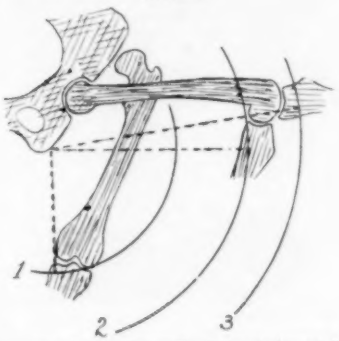


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attention to be paid to massage of the gluteal muscles, this being done by circular frictions. 3. Besides encouraging the patient to stand and walk the patient is exercised (in unilateral cases) lying on the sound side and alternately raising and lowering the limb. After a time this same exercise can be done by making the patient stand back to a table and raise the legs alternately so that the feet in turn

FIG. 5.

Stretching the hamstrings.

rest on the table. In bilateral cases the patient lies on a table for the earlier adduction-abduction exercises. 4. Spinal exercise. After the operation the spine has a backward convexity (kyphosis) in place of the previous lordosis; to restore the normal degree of lordosis the patient, lying prone, throws up the lower part of the body as shown in Fig. 6. This exercise needs help for a time.

FIG. 6.

Exercise for the spinal muscles.

*Treatment after removal of the plaster case.*—The most anxious period of the after-treatment is when the plaster apparatus is removed about six months after operation. If the exercises have been thoroughly done the patient in a double case has the appearance shown in Fig. 7 when the plaster is removed. In most cases the limbs can be adducted to about 45°. If they move easily beyond this the joints may be unstable and require a further month or two of fixation. Those cases in which the stiffness will not allow the limbs to be adducted more than 45° are the safest. Thus a careful examination of the joint is necessary when the plaster is removed in order to decide on the exercises that are required.

*In ordinary cases* the great danger is in trying to bring the legs down too rapidly. If we look at the diagram Fig. 8 another danger is made clear. The stability of the reduction depends much upon maintaining the position "3," or, in other words, of keeping the knees behind the mid-frontal plane of the body. To meet these indications in unilateral cases I order the patient to continue to wear the patten for some time after the plaster is removed and in both these and double cases the patient sleeps on a flat mattress with a firm cushion four inches thick, fastened by tapes to the thigh so that the rectangular position with the knee

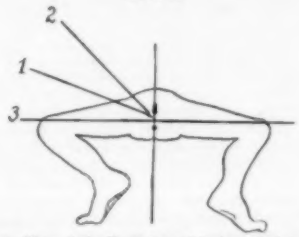
FIG. 7.

The appearance of a patient after removal of the plaster in a case of double dislocation.

well back is maintained. When one limb tends to become adducted too rapidly the patient should have the boot raised on the opposite side. The remaining exercises and rubbing are much the same as those required before the plaster was removed; especial attention is now paid to the spinal exercise. (Fig. 6.)

*In rigidly abducted cases* a special exercise is used as follows. The child lying on the back a thorough kneading of the muscles below the anterior superior iliac spine and all round the top of the thigh is done and then active, passive, and resisted adductions and abductions are done with the knee flexed as well as extended. In rare cases subcutaneous section of the tensor fasciæ femoris is required.

FIG. 8.




Shows the outline of the limbs traced from a photograph of a patient immediately after operation. Line 1 shows the degree of separation of the flexed limb that the hip-joints allow in a normal person, line 2 the degree in a case of congenital dislocation of the hip, and line 3 that after Lorenz's operation.

*In subpubic cases*, that is when the head of the femur is very prominent in the groin and well internal to the femoral artery, it is necessary to place the head of the femur in the acetabulum by flexing, and sometimes in addition internally rotating the limb and fixing it in this position in plaster for two months. At the end of this time there is sometimes a contraction of the ilio-psoas which requires special measures to correct; first, the patient lies prone, the knees elevated on a firm padded block and a sand-bag on the buttocks, for 20 minutes three times a day in order to overcome flexion at the hip-joint; and, secondly, the patient lies at the edge of a table, the pelvis being held by a nurse and the limb dropped over the edge of the table. This position allows of both active and passive extension of the hip. If these exercises are persevered in the worst-looking contracture will be overcome.

*Subspinous cases* are those in which the head of the bone

lies above the acetabulum and below the anterior superior spine. They give excellent results if the precautions against too early adduction and forward movement of the knees are

FIG. 9.

An exercise required in subspinous cases.

observed. For this the night cushion described above is required and also the exercise shown in Fig. 9, where the nurse holds the child's pelvis firm against her knee and at the same time draws back the patient's knee in the fully abducted position 10 to 20 times.

Portland-place, W.

## SOME OBSERVATIONS ON UTERINE FIBROIDS:

BASED ON A SERIES OF 150 CONSECUTIVE CASES TREATED BY ABDOMINAL OPERATION.

BY ARTHUR E. GILES, M.D., B.SC. LOND., F.R.C.S. EDIN.,

SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN; GYNÆCOLOGIST TO THE TOTTENHAM HOSPITAL.

### II.[1]

### FIBROIDS IN RELATION TO PREGNANCY, LABOUR, AND THE PUERPERIUM.[2]

WHEN a uterus harbours both a fœtus and a fibroid it may be confidently asserted that the fibroid got there first, although it may have lain latent and undiscovered until after the rightful tenant was known to have arrived. The fœtus, as we know, may be a peaceable tenant or the reverse; the fibroid is at best a tolerated interloper, and at worst an anarchist involving in ruin the home of his adoption; but when both fœtus and fibroid live in the same uterus the possibilities for mischief possessed by each are accentuated by their mutual disagreements, so that by their combination a dangerous crisis is always threatened and not always averted.

In considering this question we must discuss the matter first from the point of view of the fibroid, and, secondly, from the point of view of the fœtus, and we may formulate our inquiry thus: 1. What is the effect of pregnancy upon fibroids? 2. What is the effect of fibroids upon pregnancy? 3. How should we treat a case of pregnancy complicated by fibroids?

1. *What is the effect of pregnancy upon fibroids?*—The effect of pregnancy has to be considered in relation to (*a*) the condition of the fibroids; (*b*) the symptoms produced by fibroids; and (*c*) the question of operating upon fibroids.

(*a*) How does pregnancy affect the condition of fibroids? Much will depend on the relation of the tumour to the uterus. Thus, the growth of a subperitoneal fibroid is but little influenced by pregnancy, and when the tumour is attached to the upper zone of the uterus and has a moderately large pedicle it may remain undisturbed and undisturbing, and allow of a normal labour and puerperium. If the pedicle be narrow it may become twisted, leading to acute pain, necrosis of the tumour, and peritonitis. If the tumour is associated with the lower uterine zone, whether its site be subperitoneal, interstitial, or submucous, it may become incarcerated in the pelvis, and by interference with its blood-supply degenerative changes may result. An interstitial or submucous fibroid generally shows a marked increase of growth during pregnancy; but after confinement the fibroid commonly undergoes a measure of involution *pari passu* with that of the uterus. During labour the pedicle of a submucous fibroid may be so pressed upon as to lead to cutting off of the blood-supply and subsequent sloughing; or the capsule of the fibroid, whether interstitial or submucous, may be so injured that during the puerperium septic infection and sloughing occur. Thus, by serious annoyances or persistent pin-pricks pregnancy and labour may goad on a comparatively harmless fibroid into being a really dangerous character.

(*b*) How does pregnancy modify the symptoms produced by fibroids? The principal symptoms due to fibroids are four in number—hæmorrhage, pain, swelling, and pressure effects. Hæmorrhage is checked or arrested by pregnancy, partly because of the suppression of menstruation and partly because the ovum acts as a plug in the uterine cavity, but the plugging will fail if a submucous or polypoid fibroid is attached low down in the uterus or in the cervix, so that it lies lower than the ovum, and we shall then get hæmorrhage during pregnancy. Theoretically, a polypus in the uterine fundus might cause concealed, so-called "accidental" hæmorrhage during the later months, but I have not come across such a case. If a submucous fibroid be thwarted in its bleeding proclivities during pregnancy it may obtain an ample revenge at the time of labour by setting up profuse post-partum hæmorrhage. I shall have more to say on this point when discussing the effect of fibroids upon pregnancy. The other symptoms due to fibroids are all aggravated by pregnancy. Pain is a symptom which is due not so much to fibroids themselves as to complications, such as localised peritonitis with adhesions, diseased ovaries and tubes, or degenerative changes in the tumours; and all these conditions will be accentuated by the pressure of the enlarging uterus. Abdominal swelling and pressure effects result from the mere mechanical bulk of fibroid tumours and *a fortiori* the swelling and pressure will be intensified when to the bulk of the tumour is added the progressively greater bulk of the growing uterus. Thus pressure by a fibroid on the base of the bladder which is sufficient to lead to irritability of the bladder and frequent micturition may develop as the uterus enlarges into pressure on the urethra sufficient to cause retention of urine.

(*c*) How does pregnancy affect the question of operating upon fibroids? We may reply to this broadly that sometimes the incidence of pregnancy will defer operation, when the chances of natural delivery are good, for the child's sake; and on the other hand, an operation may be precipitated, if labour difficulties threaten, for the mother's sake. When an operation has to be undertaken the fact of pregnancy will make a myomectomy preferable to a hysterectomy whenever that is possible.

2. *What is the effect of fibroids upon pregnancy?*—Sometimes the fibroid is so peaceably disposed that when the fœtus gives up possession at the expiration of his normal tenancy he has never known his peril and his landlady has never suspected that in addition to her accredited lodger she harboured an undesirable alien. Opinions among authorities differ as to whether this happy consummation is the rule or the exception; but of the potentiality for evil possessed by the fibroid there can be no doubt, and the risks may be summed up as follows:—

(*a*) Abortion occurs, due either to pressure or to the fibroid interfering with the blood-supply of the placental site; such abortions appear to take place usually at about the fourth month. In one case that came under my notice (No. 93 on the list) pregnancy was arrested at two and a

[1] Part I. was published in THE LANCET of March 2nd, 1907, p. 574.
[2] An address delivered at the North-East London Post-Graduate College, Tottenham, on Nov. 20th, 1906.

half months, with symptoms of abortion; the history did not show clearly whether the ovum had been expelled or not; on opening the uterus after hysterectomy had been done the fœtus and placenta were found within, side by side with a fibroid of the size of a cricket ball.

(*b*) The tumour and uterus may become incarcerated in the pelvis; and unless the mass can be pushed up out of the pelvis abortion will occur or an operation will be required. I recently saw a case under the care of one of my colleagues where a very large pedunculated fibroid weighing about 17 pounds had pressed the uterus down into the pelvis, causing urgent bladder symptoms. In these cases the symptoms, of which retention of urine is a constant feature, resemble those produced by retroversion of the gravid uterus.

(*c*) The tumour, if large, may cause great pain and distress by mechanical distension, and the symptoms become more and more acute as the pregnant uterus enlarges.

(*d*) The tumour may remain quiescent during pregnancy, and then, if situated low in the pelvis, and especially if fixed there, it may cause obstructed labour of so pronounced a type that Cæsarean section gives the only chance of delivery. The kind of tumour that is most likely to lead to this result is a pedunculated fibroid springing from the back of the uterus or cervix and lying jammed under the promontory of the sacrum. I have met with a case of this kind (No. 33) where a Cæsarean hysterectomy was required. A cervix fibroid filling up the pelvis would also be a complete bar to delivery; but such a tumour, obstructing the cervical canal, would probably be also a complete bar to conception. Certainly I have not met with a case of cervix fibroid complicating pregnancy nor have I seen such a case reported. An intra-uterine or polypoid fibroid lying in the way of the advancing head would similarly obstruct labour. A fibroid that is not in a position to mechanically obstruct labour may yet lead to dystocia by inducing malpresentations; or it may cause trouble in the third stage of labour by hindering the expulsion of the placenta.

(*e*) An intra-uterine fibroid may cause violent post-partum hæmorrhage. I have a vivid recollection of being called to see a patient a week after delivery. She had had profuse hæmorrhage ever since the confinement and she was terribly blanched and almost pulseless. I found a large partly necrotic fibroid presenting at the os and removed it piecemeal then and there, but she did not rally and died within a few hours.

(*f*) I have already spoken of the risk of septic infection when the capsule of an intra-uterine fibroid becomes injured during labour.

Thus it will be seen that sometimes a fibroid gratuitously disturbs pregnancy or obstructs labour, and sometimes the pregnancy wantonly irritates and annoys the fibroid, which promptly retaliates in such a way as to place mother or child in the gravest possible peril, with sometimes fatal results to one or to both.

3. *How shall we treat a case of pregnancy complicated by fibroids?*—I have laid stress on the fact that a fibroid may coexist with pregnancy and cause no difficulty at any stage, and such a case does not require to be treated otherwise than as an ordinary pregnancy. But it does not follow that because there are no symptoms during pregnancy there will be no trouble during labour, and therefore when we meet with a case early in pregnancy we must not be content to let events take their course and treat complications as they arise, but we must endeavour to form a forecast so as to anticipate difficulties and prevent them.

Suppose, then, that a patient who is known to suffer from fibroid, becomes pregnant: if the tumours are multiple and large, I have no hesitation in saying that we shall do best for the patient by performing a hysterectomy as early as possible, even though this means sacrificing the child, for it is very unlikely that such a pregnancy will be able to continue to term and abortion with multiple fibroids and hysterectomy during the middle or later months are both fraught with extra risk; whilst if the pregnancy should go through undisturbed delivery would have to be accomplished by means of a Cæsarean hysterectomy of a formidable character. Cases of successful hysterectomy at the third to fifth months have been reported. If, on the other hand, the fibroid is single and not too large our course of action will depend upon its position. When it occupies the upper part of the uterus it may be safely left and watched for a few months, and in all probability it will be possible to let the patient go through her confinement undisturbed; but the medical attendant must hold a watching brief and be prepared for eventualities and especially for hæmorrhage during and after labour and indications of sepsis during the puerperium. I have watched two such cases during their pregnancy and each had a normal confinement; one of these was operated upon six weeks after labour and a sessile subperitoneal fibroid was removed by myomectomy (No. 39); the other I am still watching. Another patient was watched during pregnancy by her medical attendant and safely delivered, and five weeks later I removed by myomectomy a large degenerating subperitoneal fibroid (No. 145).

A fibroid may appear harmless at the beginning of pregnancy, but as time goes on some complication may set in, such as twisting of the pedicle, degeneration, or inflammatory changes. Interference will then be necessary and it will resolve itself into a choice between myomectomy and hysterectomy. With a pedunculated fibroid myomectomy will generally be the correct treatment; with an interstitial fibroid, myomectomy may yet be possible, the patient going to term. Several cases of this kind have been reported by Bland-Sutton, Emmet, and others.[3] Emmet's case was very remarkable in that he removed nine separate tumours through eight incisions and yet the patient went on to her full time. Sometimes the condition met with early in pregnancy is a submucous or polypoid fibroid presenting at the os externum or even protruding into the vagina, and then the fibroid may usually be safely removed vaginally without disturbing the pregnancy, as was done in a case of my own.

There is a type of tumour that causes considerable anxiety in deciding what to do with it, and that is a fibroid attached to the lower uterine zone or cervix or lying in the broad ligament. Such a tumour will almost certainly obstruct labour and we have to choose between the alternatives of early operation (with the risk of inducing abortion and the possibility of having to remove the uterus) and allowing the patient to go to full time with the intention of doing a Cæsarean section. Both courses have been adopted at various time; in the latter case the patient must, of course, be kept closely under observation, so that she does not embark on labour without the possibility of immediate assistance. A brilliant case of this kind was reported by Dr. H. Russell Andrews at a recent meeting of the Obstetrical Society; he managed to tide the patient over various troubles, including bladder trouble in the early months, and performed a successful Cæsarean section, with the birth of a living child, at term. In a case that I met with some years ago (No. 8) a fibroid in the broad ligament complicated pregnancy at four and a half months. I performed a myomectomy, enucleating the tumour from the broad ligament; secondary hæmorrhage occurred from the vascular attachment of the tumour to the side of the cervix and I had to re-open and perform a hysterectomy in order to control the hæmorrhage. A further complication of pneumonia supervened and to this the patient succumbed three days later.

If a patient with a fibroid impacted in the pelvis has been allowed to go to full time or has not come under observation until labour has set in four courses are open. (*a*) It might be possible to open the abdomen, remove the tumour, and allow delivery to be completed through the natural passages, but I have not seen or heard of a case in which this course was adopted. (*b*) Cæsarean section is performed and the uterus with its tumour or tumours is left to be dealt with at a later date. Donald reported a case of this kind, in which a Cæsarean section was followed by a hysterectomy some time after. The case was mentioned in the course of an interesting paper read before the Obstetrical Society of London on the subject of Fibroids Complicating Pregnancy.[4] (*c*) A Cæsarean section is performed and a myomectomy is done at the same time; cases of this kind have been reported. (*d*) Cæsarean hysterectomy is performed—that is to say, the child is delivered and the uterus is removed with its tumour or tumours. This is the course which has been most frequently adopted, and it was the plan that I followed in the only case of this kind that has come under my care (No. 33). Lastly, a fibroid may be operated upon during the puerperium; in some cases the symptoms may be urgent, as when hæmorrhage is going on, and then the operation must be done as soon as possible after

[3] See Medical Annual for 1903, pp. 319–323, for references.
[4] Transactions of the Obstetrical Society of London, 1901.

delivery; it may be a vaginal myomectomy, as in the case I have already related, or it may be a hysterectomy. When the symptoms are not very urgent it is better to wait for at least five or six weeks after labour in order to give time for involution to take place.

Two conclusions emerge almost naturally from these observations. The first is that the complication of fibroids and pregnancy is one that may be attended with very serious and even fatal results; and therefore it is a matter of satisfaction that the complication is not very frequently met with. The second is that no dogmatic rules of treatment, operative or otherwise, can be laid down as being of general applicability; every case must be carefully considered in all its bearings and dealt with according to the particular circumstances present. A due regard must be paid to the claims of the unborn babe to be allowed its nine months and to be given its chance of live birth; the natural aspirations of the mother to effective motherhood must have their weight; but the consideration of saving the mother's life must after all remain paramount, even at the cost of sacrificing, if necessary, both her present and her future hopes of maternity.

### FIBROIDS IN RELATION TO THE MENOPAUSE.[5]

The time of the change of life is popularly credited with various characteristic attributes—good, bad, and indifferent. In many respects it has an evil reputation, for it is supposed to be a dangerous epoch of life for a woman to reach; it is apt, say the gossips, to bring with it that greatest dread of womankind—cancer—and it is darkly hinted that other messengers of death and destruction may follow in its train. Of course, we all know well enough that the fifth decade of life is a time to which certain diseases are very partial, but other decades are preferred by other diseases, and the time at which menstruation ceases has not really, as such, any guilty pre-eminence. As far as dangers and risks are concerned the critical age of life is the moment of birth. Let us admit, then, that the menopause does not deserve all the blame that it gets. But, on the other hand, does it merit all the credit that it receives? Popular opinion attributes to it not only possible evil, but also positive good. It is a time, say the gossips again, when a natural and spontaneous cure of fibroid tumours may be looked for, and they support the statement by the argument, which is to them unanswerable: "Doctors have said it." It is true that doctors have said it, even those that sit in high places and exercise a formative influence on the developing minds of embryonic practitioners. How often have we met with cases in which a woman with fibroids has consulted both family doctor and specialist and has been advised to wait for the change of life? The woman may be blanched and exsanguined from loss of blood; she may be a bedridden invalid; she may be in constant misery from pain and pressure; she may be under 40 years of age; but whatever her age or symptoms the only help she receives is the advice: Wait till the change of life and then all will be well.

Is this advice well founded? My present object is to show that it is not. The doctrine that the change of life is nature's cure for fibroids I shall characterise as a mischievous tradition and I shall give reasons, based on a number of cases, for the faith that is in me. The average age of the menopause may be put down as 48, and on this basis I have selected for investigation from among my cases all those patients who were aged 48 or over at the time of operation. I shall give a few brief notes of these cases.

#### BRIEF SUMMARY OF CASES OF FIBROIDS OCCURRING AT OR AFTER THE MENOPAUSE.

The figures in parentheses denote the number of the case in the complete list of 150 consecutive cases.

1.—(16) **Mrs. S.**, age 48, under Dr. R. B. Marjoribanks, operated on in the Tottenham Hospital, Jan. 15th, 1901, for multiple uterine fibroids with diseased appendages; abdominal hysterectomy with removal of both appendages; recovery. History: Patient had had excessive hæmorrhage for nine years, only partly and temporarily controlled by drugs. For three months swelling of the abdomen had been a source of great discomfort.

2.—(18) **Mrs. J.**, age 51, Chelsea Hospital for Women, April 1st, 1901. Large uterine fibroid with hydrosalpinx; abdominal hysterectomy with removal of both appendages; recovery. History: Patient had had menorrhagia for 20 years; for the last two years it had been excessive and for six months she had been incapacitated from work; the bowels were constipated "owing to the pressure of the tumour."

3.—(19) **Mrs. N.**, age 56, Tottenham Hospital, April 23rd, 1901. Uterine fibroid; abdominal hysterectomy; death from sepsis. History: In May, 1900, patient came complaining of excessive hæmorrhage for 12 months; she was never quite clear. Menstruation had never ceased. A fibroid polypus projected from the external os and was removed; hæmorrhage ceased for three months, but then returned as much as before, with pains in the back and abdomen, frequent micturition, and offensive discharge. On examination a fibroid of the size of a fœtal head was discovered.

4.—(27) **Mrs. W.**, age 52, Chelsea Hospital for Women, Nov. 24th, 1901. There was a uterine fibroid impacted and adherent in the pelvis, with a right ovarian dermoid; abdominal hysterectomy with a right ovariotomy; recovery. History: For two years there had been difficulty with micturition, getting gradually worse till recently stoppage occurred and she had to have the urine drawn off. Menstruation was regular and moderate till three months ago; since then, six weeks' intervals. There was pus in the urine.

5.—(29) **Miss E.**, age 53, Tottenham Hospital, Dec. 17th, 1901. The condition was a large fibroid in a uterus septus; abdominal hysterectomy with removal of the right appendages; recovery. History: Menstruation still going on regularly and moderate. For four months patient had had pain in the right side, with pain and difficulty on defæcation. On examination a tumour was found blocking up the pelvis.

6.—(31) **Miss S.**, age 63, under Dr. Marjoribanks, Tottenham Hospital, Feb. 20th, 1902. Large pedunculated cystic fibroid from the right cornu of the uterus, and three smaller fibroids; abdominal myomectomy; recovery. History: Menopause occurred at 53; two years ago there was hæmorrhage for two or three months; and again in the winter of 1900-01 and 1901-02. A good deal of abdominal pain.

7.—(38) **Mrs. S.**, aged 51, Tottenham Hospital, August 28th, 1902. Multiple large uterine fibroids with cystic ovaries; abdominal hysterectomy with removal of both appendages; recovery. History: For five years pain in the abdomen, with irregular periods of menorrhagia, and gradual increase in the size of the abdomen. For three months there had been swelling of the legs and frequency of micturition. On examination the uterus was of the size of a Rugby football; surface irregular, covered with knots. It filled the whole of the false pelvis, and there was a tumour which dipped down, bulging the anterior vaginal wall and nearly occluding the vagina.

8.—(40) **Miss G.**, age 49, under Dr. A. Irby Webster, Chelsea Hospital for Women, Sept. 8th, 1902. Multiple uterine fibroids, including a large pedunculated fibroid of the fundus, with twisted pedicle; abdominal hysterectomy, with removal of both appendages; recovery. History: Gradual increase in size for eight years; for the last three weeks the increase had been rapid. Pain occurred at first only when stooping or walking; lately she had had pain even when lying in bed. Menstruation had not increased in quantity; but for six months it had come on every three weeks.

9.—(42) **Mrs. D.**, age 63, under Dr. C. R. Salisbury, Tottenham Hospital, Sept. 11th, 1902. Multiple uterine fibroids; abdominal hysterectomy; recovery. History: Menopause occurred at 47. Five years ago she noticed a moveable swelling in the right side, which disappeared after a time. A month ago symptoms of intestinal obstruction came on. On examination a tumour was found in the pelvis, pressing on the bowel; it was pushed up and the obstruction was relieved.

10.—(45) **Miss C.**, age 53, under Dr. J. Cater, Tottenham Hospital, Oct 9th, 1902. Multiple calcified uterine fibroids; abdominal hysterectomy; death from asthenia on the sixth day. History: Menopause at 49. For some time there had been abdominal pain, gradually increasing; lately she had noticed a hard lump in the abdomen. There were an offensive discharge and frequent micturition. On examination a large irregular, nodular, and very hard tumour filled the pelvis and rose to within an inch of the umbilicus.

11.—(57) **Miss W.**, age 51, under Dr. L. P. Scott, private case, May 6th, 1903. Multiple large uterine fibroids; abdominal hysterectomy; death from shock and heart failure 10 hours after operation. History: For some time the patient had had a bad heart and shortness of breath; she could not walk and could not rest lying down at night. For two years menstruation had been excessive, with clots; difficulty with micturition. On examination a very large tumour was found, evidently obstructing the action of heart and lungs.

12.—(68) **Mrs. W.**, age 49, Tottenham Hospital, Oct. 8th, 1903. Fibroid in anterior wall of uterus; abdominal myomectomy and ventrofixation; recovery. History: 15 months ago patient had a severe flooding; since then she had lost a great deal at intervals of two or three weeks, the flow lasting eight to sixteen days. She had lost flesh and had anorexia and much pain; she looked pallid and anæmic.

13.—(74) **Mrs. P.**, age 54, Chelsea Hospital for Women, Dec. 14th, 1903. Uterine fibroid; abdominal hysterectomy with removal of both appendages; after operation, bronchitis, irregular pulse, suppuration in the wound and gradual sinking; death on seventeenth day. History: Nine weeks ago patient noticed a swelling in the left side, getting gradually bigger; pain in the back. Menstruation had never ceased; for 12 months it had been irregular, with floodings. She was so stout that she could hardly turn in bed. Operation rendered very difficult by immense deposits of fat.

14.—(76) **Mrs. G.**, age 52, under Dr. H. J. Thornton, private case, Jan. 31st, 1904. Subperitoneal and interstitial fibroids, with retroversion; abdominal myomectomy and ventrofixation; recovery. History: Menopause two years ago. Patient had bearing-down and weight in the vagina, pressure on the bladder and frequent micturition. She wore a pessary which caused a yellow discharge and pressed on the tumour.

15.—(77) **Mrs. H.**, age 50, under Dr. W. B. Benjafield, Tottenham Hospital, Feb. 4th, 1904. Uterine fibroid with cystic right ovary; abdominal hysterectomy and right ovariotomy; recovery. History: Two and a half years ago she had a severe flooding, and again a year ago; for the last four months there had been constant hæmorrhage and she had been confined to bed nearly all the time. She looked pale and anæmic.

16.—(81) **Mrs. F.**, age 57, Tottenham Hospital, April 21st, 1904. Uterine fibroid; abdominal hysterectomy; recovery. History: Menopause occurred at 51. A year ago she began to have a discharge of blood which had gone on till operation; she had lost a good deal of flesh and suffered much from abdominal pain.

17.—(86) **Mrs. B.**, age 49, under Dr. H. Lloyd Patch, private case, July 17th, 1904. Large red soft fibroid; recovery. History: Patient had had excessive hæmorrhage and had never been clear for two years; she had been so weak that she had been unable to get about, and for some weeks had been unable to walk at all.

18.—(97) **Mrs. P.**, age 53, Chelsea Hospital for Women, April 10th, 1905. Multiple uterine fibroids and left ovarian cyst; abdominal

[5] A paper read before the City Division of the British Medical Association on Nov. 29th, 1906.

hysterectomy and double ovariotomy; recovery. History: For four years patient had had menorrhagia and dysmenorrhœa; abdominal pain, especially on the right side, and frequent micturition.

19.—(100) Mrs. B., age 49, Tottenham Hospital, May 4th, 1905. Large uterine fibroid; abdominal hysterectomy; recovery. History: In February, 1905, patient was admitted with a history of constant hæmorrhage and offensive vaginal discharge for three months; abdominal pain and discomfort for six months; frequent micturition and general debility. A large abdominal tumour was found and also a large mass filling up the vagina, with foul blood-stained discharge. This was a large fibroid whose base of attachment was high on the anterior wall of the uterus. It was removed by morcellement; patient was readmitted in May to have a hysterectomy done.

20.—(102) Mrs. B., age 51, under Dr. D. Petty, Tottenham Hospital, May 18th, 1905. Large cystic uterine fibroid with double ovarian papilloma: abdominal hysterectomy and double ovariotomy; recovery. History: Menopause at 50. For two years patient had noticed an abdominal swelling; for eight months there had been left abdominal pain and increasing difficulty in getting about; swelling of the legs, difficulty with micturition, and constipation.

21.—(104) Mrs. A., age 50, under Dr. A. A. Napper, private case, June 2nd, 1905. Uterine fibroids with cystic ovaries; abdominal hysterectomy; recovery. History: For some time patient had had excessive hæmorrhage and increasing difficulty in getting about.

22.—(105) Mrs. C., age 50, under Dr. F. J. Tresilian, private case, August 25th, 1905. Uterine fibroids with cystic ovaries; abdominal hysterectomy; recovery. History: When first seen in November, 1903, there had been menorrhagia for two years; patient felt weak and lifeless after the periods, with a little improvement between; she had had retching, anorexia, headaches. Curetting was followed by temporary improvement; later she developed phlegmasia, first in one leg, then in the other. Hæmorrhage returned; in August, 1905, she was thought fit to stand a hysterectomy.

23.—(120) Miss H., age 49, under Dr. A. Ogier Ward, Tottenham Hospital, Jan. 11th, 1906. Multiple fibroids; abdominal hysterectomy; death from sepsis on the fourth day. History: Patient used to have menorrhagia, especially two or three years ago; this had been better lately, but menstruation still went on. She was unable to get about and do her work. A large mass of fibroids was found, filling up the pelvis.

24.—(128) Miss B., age 43, under Dr. J. W. Hunt, private case, April 19th, 1906. Large softening uterine fibroid; abdominal hysterectomy; recovery. History: Patient had had bladder pressure for two and a half years and had suffered from retention of urine; menstruation was always rather free and ceased two months ago. Patient at first declined operation and was watched for 14 months; the tumour was then found to be increasing in size and degenerative changes were feared. Operation was then agreed to.

25.—(130) Miss B., age 49, under Dr. Herbert E. Powell, Tottenham Hospital, April 28th, 1906. Uterine fibroid, cystic left ovary; abdominal hysterectomy and suspension of rectum to sacrum; recovery. History: Patient had been a bedridden invalid for many years; she was seen by Mr. H. W. Carson for prolapse of the rectum; he considered it to be partly due to pressure of a large retroverted uterus. At the operation a fibroid was discovered in the retroverted uterus and hysterectomy was considered advisable.

26.—(137) Miss L., age 49, under Dr. G. Angus Hunt, Tottenham Hospital, June 14th, 1906. Very large uterine fibroid; abdominal hysterectomy; recovery. History: For some time there had been increasing disablement, due to enormous distension of the abdomen by the tumour, and menorrhagia.

27.—(141) Mrs. B., age 50, Chelsea Hospital for Women, July 2nd, 1906. Uterine fibroids; abdominal hysterectomy and double ovariotomy; recovery. History: Menopause occurred at 48; patient complained of pain in the back and hips, scalding pains during micturition, dyspareunia and constipation. On examination the uterus was the seat of three subperitoneal fibroids, of the size of small oranges.

28.—(148) Mrs. W., age 57, under Dr. S. Lyon, Tottenham Hospital, Oct. 18th, 1905. Uterine fibroids, with pedunculated fundal fibroid adherent to the abdominal wall; abdominal hysterectomy; recovery. History: 16 years ago a double ovariotomy was performed at the London Hospital. For some months there had been a great deal of abdominal pain and disablement.

29.—(150) Mrs. G., age 46, under Dr. Powell, private case, Oct. 21st, 1906. Uterine fibroid with commencing cystic degeneration; abdominal panhysterectomy; recovery. History: Menopause ten months ago. For some weeks the patient had had irregular hæmorrhage; examination showed a large uterus, cervical canal patulous, with rough walls, arousing suspicion of carcinoma. Examination under anæsthesia revealed a softening fibroid bulging into the uterine canal; a piece of the cervix excised for microscopical examination was reported to be benignant. On opening the uterus after operation there was a partly cystic fibroid; a small polypus near the fundus explained the hæmorrhage.

These cases are instructive in various ways. The first point is that 29 out of 150, or 20 per cent., of the operations were necessitated by troubles arising at or after the age when symptoms ought to be subsiding if the menopause had any therapeutic value. We shall study the symptoms and complications met with rather more closely.

### A. SYMPTOMS.

*Hæmorrhage.*—This was the principal reason for the operation in 16 cases. Three of them had irregular floodings; in two of these the bleeding came on after the cessation of menstruation. Of the remainder, some had profuse menorrhagia, others had constant hæmorrhage (metrorrhagia). In most cases the excessive loss dated back from one to four years, but one patient had had menorrhagia for 20 years. Looking at all the cases from the point of view of the expectation of the cure of hæmorrhage by the onset of the menopause, we find that in 10 cases the menopause had occurred before the patient came under observation, and in 19 cases it had not. The ages of the 19 patients who had never ceased menstruating were as follows: 1 was 48, 7 were 49, 3 were 50, 3 were 51, 1 was 52, 2 were 53, 1 was 54, and 1 was 56 years respectively; the average age of the 19 cases was 50½ years. In 14 of the 19 cases hæmorrhage was excessive; in the remaining 5 the monthly loss was moderate. Turning to the 10 cases where the menopause had taken place, in one of them it was artificially induced by operation and we can omit this one from present consideration. The remaining nine were as follows:—

| | | | |
|---|---|---|---|
| Present age | 46 years; | menopause occurred at | 46 (10 months previously). |
| ,, | 48 ,, | ,, | occurred at 48 (2 months previously). |
| ,, | 50 ,, | ,, | occurred at 48 |
| ,, | 51 ,, | ,, | ,, 50 |
| ,, | 52 ,, | ,, | ,, 50 |
| ,, | 53 ,, | ,, | ,, 49 |
| ,, | 57 ,, | ,, | ,, 51 |
| ,, | 63 ,, | ,, | ,, 47 |
| ,, | 63 ,, | ,, | ,, 53 |
| | Average ... ... ... ... ... ... ... | | 49½ |

In nearly all these cases the tumours were subperitoneal and therefore not prone to hæmorrhage, yet the average age of the menopause was 49½ years, whilst in cases where hæmorrhage was a pronounced feature patients reached the average age of 50½ years without cessation of the flow. It is therefore clear that uterine fibroids have a marked effect in delaying the menopause, especially when the tumours are intra-uterine.

I have, of course, used the term menopause in the symptomatic sense, as if cessation of the function of menstruation were synonymous with the cessation of hæmorrhage. But if I may quote from my monograph on Menstruation,* "it is probable that in many cases true menstruation, in the sense of a periodic preparation for pregnancy, really ceases, together with ovulation, at about the usual time, whilst hæmorrhage is kept up by the tumour for years later. In cases where no vital complications have meanwhile supervened, the fibroid may then at length cease to grow and undergo some atrophy, with the result that hæmorrhage ceases. This is called the menopause and it is then said that the menopause has brought about the cure of the tumour, which is, to say the least of it, begging the question. The view here expressed, that the menopause may take place without arrest of the hæmorrhage, receives support from those cases where an artificial menopause has been induced by double oöphorectomy for fibroids, and where the bleeding nevertheless continues because the growth is polypoid or intramural." I may add that I think that it is probable that in some cases true menstruation does really go on beyond the usual age, the stimulus to continued ovulation being perhaps supplied by the uterine hyperæmia.

I have dwelt upon the question of hæmorrhage at some length because it is such an important symptom and because it is one possessing special interest in relation to the menopause. We can dispose of the other symptoms more briefly.

*Swelling of the abdomen*, owing to the size of the tumour, was complained of in six cases.

*Abdominal pain* was present in 16 cases; in some of these it was partly due to complications; in others it resulted from the pressure of the tumour.

*Pressure symptoms* are often present in cases of fibroids; among these cases there were 11 in which pressure on the bladder or urethra was complained of, taking the form of painful and frequent micturition; in two of the cases occasional retention of urine occurred. Pressure on the bowel, leading to painful defæcation or constipation, was present in four cases, and one had partial intestinal obstruction (No. 9). Three patients had swelling of the legs, due to intrapelvic pressure, and in one (No. 11) the large tumour led to considerable distress to the heart and lungs from pressure on the diaphragm.

*Disablement*, more or less complete, was complained of in no fewer than 11 of the 29 cases; in some it was the result of profound anæmia, in others it was due to pain and inconvenience, resulting from the size of the tumour. Some of the patients had been confined to bed for weeks or months.

There is a special reason why pressure symptoms are more liable to occur in patients of the class that we are considering; and it is this, that if, with the onset of the menopause, some tendency to shrinkage in the fibroids should

* Menstruation and its Disorders, 1901, p. 80.

take place a tumour which has previously occupied an intra-abdominal position because it was too large to fall into the pelvis may diminish sufficiently to pass below the pelvic brim and drop into the true pelvis, where it is as disturbing to the pelvic contents as the fœtal head is during labour.

I will briefly review the indications for operation in the ten cases in which the menopause had occurred. Case 6. Return of hæmorrhage eight years after the menopause. Case 9. Symptoms of intestinal obstruction 16 years after the menopause. It is noteworthy that five years previously the patient had noticed a tumour in the right side which afterwards disappeared; it probably shrank sufficiently to drop into the true pelvis. Case 10. Abdominal pain, disablement, and bladder pressure four years after the menopause. Case 14. Bladder pressure and bearing down two years after the menopause. Case 16. Return of hæmorrhage five years after the menopause; pain and loss of flesh. Case 20. Difficulty in getting about, pain, swelling of the legs and bladder pressure a year after the menopause. Case 24. Increase in the size of the tumour and bladder pressure two months after the menopause. Case 27. Pain and bladder pressure two years after the menopause. Case 28. Abdominal pain from an adherent fibroid 16 years after an artificially induced menopause. Case 29. Return of hæmorrhage ten months after the menopause, with indications of cystic degeneration in the tumour.

### B. COMPLICATIONS.

Changes in the tumours were present in six cases: in one of these the tumours were calcified; in two there were necrobiotic changes; in three there was cystic degeneration. One of the last three was further complicated by twisting of the pedicle, and another by the presence of double ovarian papilloma. One patient had an ovarian dermoid and two others had an ovarian cyst, one of which had hæmorrhagic contents. In 11 cases the fibroid was complicated by cystic ovaries and one patient had a hydrosalpinx. Thus some complication involving the pelvic organs was present in 21 cases, or 72 per cent., whilst degenerative changes in the tumours occurred in five, or 17 per cent.

There is a point in relation to these cases that I should like to say a word or two about, and that is the operative mortality. It will be observed that among these 29 cases there were five deaths; and if we contrast this with the other cases in this series we have this rather striking result: among 121 cases under the age of 49 years the mortality was four, or 3·3 per cent.; among 29 cases aged 49 years or over the mortality was five, or 17·2 per cent. It might be supposed that this was a mere coincidence, but I think not, because an examination of the causes of death in the two groups shows the following:—

| Group under 49 years. | | Group 49 years and over. | |
|---|---|---|---|
| Serial number. | Cause of death. | Serial number. | Cause of death. |
| 8 | Pneumonia. | 19 | Sepsis. |
| 67 | Sepsis. | 45 | Shock and asthenia. |
| 82 | Secondary hæmorrhage. | 57 | Shock; heart failure. |
| 83 | Sepsis from coexisting pyosalpinx. | 74 | Chronic bronchitis and heart failure. |
| | | 120 | Sepsis. |

Sepsis has, of course, no direct relation to the age of the patient or the duration of her complaint; but even if we exclude these cases from consideration we find that the mortality among 120 cases under 49 years was 2·5 per cent., while the mortality among 27 cases, aged 49 years and over, was 11·1 per cent. I think that we may reasonably assume that if the remaining three fatal cases in the older group had been operated upon earlier, before they had become so pulled down and drained by the disease, the result might have been different. I have therefore no hesitation in drawing the conclusion that when operation on cases of fibroids is delayed until the patient has reached the age of the menopause the operative results are less satisfactory than in the case of younger patients.

In conclusion, I may summarise as follows my reasons, based upon the study of these cases, for stating that the doctrine that the change of life is nature's cure for fibroids is a mischievous tradition:—

1. The ostensible menopause is delayed in cases of fibroids, and menstruation—or, at least, uterine hæmorrhage—may continue for years after the usual age of the menopause has been passed; and meanwhile the severe losses of blood may imperil the patient's life, or impair her health so seriously that many years will be required to recover the lost ground.

2. The cessation of hæmorrhage, when it does occur, does away with only one of the dangers incidental to fibroids; and the patient may remain for many years disabled by pain and by the weight of the tumour.

3. The time of the menopause has its own special risks in relation to fibroids; the most important are degenerative changes in the tumours and injurious pressure effects when a tumour which has occupied an abdominal position atrophies just sufficiently to allow of its falling into and filling the true pelvis.

4. When, in the vain hope that the menopause is going to work a cure, operation has been delayed year by year and then has to be undertaken in spite of complications and of the enfeebled state of the patient, the danger of a fatal result is materially increased.

Upper Wimpole street, W.

## OPERATIVE TREATMENT OF TRAUMATIC PSYCHOSIS.

BY BERNARD HOLLANDER, M.D. FREIBURG, M.R.C.S. ENG., L.R.C.P. LOND.

THE hypothesis of localisation has helped me to trace in a large number of cases the cause of mental derangement to injury, sometimes apparently so slight as to be neglected at the time, and I am of opinion that in all such cases where the symptoms can be localised and an injury can be traced to the same region, although apparently not severe, an exploratory trephining operation should be made as likely to reveal pathological changes. In the following case the symptoms of severe mental depression and a transient attack of word blindness enabled me to conclude that the disease was originally limited to the neighbourhood of the supramarginal and angular gyri, and that it had subsequently spread downwards over the posterior temporal area, judging by the symptoms of irritability and delusions of suspicion, whereof we have 100 cases on record in which the disease was confined to this region. Finding on inquiry that this part had been actually injured, though there was no outward visible sign, I felt certain that pathological changes would be discovered on trepanation, and advised operation, to which the patient, himself an experienced physician, readily agreed. The result, as will be seen, was in every way satisfactory.

The patient, a doctor of medicine, aged 39 years, with a negative family history and no previous illness, received a kick from a horse on the right side of the chin in 1898, followed by severe frontal headache and neuralgic pains. A year later he had a heavy fall from his cycle on the right side of his head, leaving no visible signs of injury but followed by hemicrania of great severity, preventing any intellectual work, and by definite character changes. He became emotional, anxious, very depressed, accused himself of unpardonable sins, developed suicidal ideas, grew suspicious, easily offended, irritable and profane, erotic, and subject to uncontrollable fits of sexual excess. He suffered also from obstinate constipation, persistent insomnia, and had sensory disturbances in the left arm. He sought relief in change of scene by travelling but to no effect, and his strange conduct frequently led him into difficulties. In the spring of 1905 he had symptoms of word blindness and a transient attack of paralysis of the right side of the face and left half of the body. The depression and headache increased and all medical treatment failed to cure him. Believing in the possibility of localisation of mental functions, and hoping that if his symptoms were localisable operation would show pathological changes and give relief, he came to London. On examination on Oct. 3rd, 1905, he appeared depressed, emotional, showed strong suicidal tendency, and complained of intense headache on the right side and a burning sensation just posterior to the right parietal eminence.

On Oct. 9th, 1905, operation was performed by Mr. William Turner. Chloroform anæsthesia was employed. When the head had been shaved a scar became visible

two inches behind the right ear and two inches long, commencing behind the parietal eminence in the situation of the angular gyrus and extending vertically downwards, corresponding to the posterior part of the temporal convolutions A semicircular flap was made, extending from the tip of the ear to the occipital protuberance. The scar tissues were found firmly adherent to the bone and had to be forcibly detached. Two trephine openings were made, one 1 inch in diameter, and the other ¾ths of an inch just below and a little behind the other and joined together. The bone over the angular gyrus was found thickened and hardened, with scarcely any diploe and the dura mater was adherent to it. When the bone was removed the dura mater bulged into the opening, but showed no signs of pulsation, although the pulse of the patient at the time was quite strong. On cross incision of the dura mater a stream of clear fluid escaped. The membrane was opaque and thickened, but the brain appeared normal and on examination the neighbouring parts revealed no pathological changes. The dura mater was stitched together and the periosteum over it, the portion of bone not being replaced. A drainage-tube was kept in the scalp wound for three weeks. The patient during this period had still occasional attacks of depression and irritability, headache, and trigeminal neuralgia, but with the closing of the wound all symptoms disappeared. On Nov. 15th the wound had quite healed. The trephine openings were felt through the scalp. The brain was felt pulsating beneath, but there was no protrusion. There was no tenderness of the surrounding nerves. The general condition was quite well. On Feb. 20th, 1907, the patient reported himself as absolutely well. There had been no return of the insomnia, the headache, neuralgic pains, or the sensory disturbances in the left hand and arm. The obstinate constipation of the bowels that obtained throughout the case prior to the operation one and a half years ago had entirely disappeared. Mentally, he had lost completely his morbid suspicion and all suicidal thoughts. The attacks of mental depression, the erotic feelings and morbid sexual symptoms had likewise entirely disappeared. He had resumed interest in all the affairs of life. Surgically the head was perfect in appearance and there was no tenderness anywhere.

Welbeck-street, W.

# Clinical Notes:

## MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

### DISLOCATION OF THE SEMILUNAR BONE COMPLICATING A FRACTURE OF THE STYLOID PROCESS OF THE RADIUS.

BY PHILIP R. WRIGLEY, F.R.C.S. ENG.,
RESIDENT SURGICAL OFFICER TO THE MANCHESTER ROYAL INFIRMARY.

THE literature on the subject of carpal dislocations has been recently reviewed and brought up to date by Mr. J. A. MacKenzie in the *Practitioner* but I am not aware of any case recorded where such dislocation has induced ulnar paralysis. Gamgee[1] published a case where an anterior dislocation of the semilunar bone led to pressure on the median nerve, so injurious that excision of the bone was necessary.

The subject of the present contribution, a painter, 35 years of age, fell a distance of 30 feet from a ladder, dropping on to his feet and then on his outstretched right hand. He was seen by a medical man and treated for a Colles's fracture. Some days later when I first examined him I found a transverse lacerated wound one inch long in the front of the inner side of the wrist which was very swollen, though it was possible to recognise a fracture of the lower end of the radius. A few days later, when the swelling had somewhat subsided, further examination revealed a rounded projection of bone on the front of the wrist to the inner side of the palmaris longus tendon. A diagnosis of displaced carpal bone was made and radiograms showed the injury to be the dislocation forwards and upwards of the semilunar bone which lay just in front of the articulation between the radius and ulna, the condition being complicated by a vertical fracture of the radius severing the styloid process from the rest of the radius. As the dislocated bone seemed too firmly fixed for reduction and the wound was suppurating freely, rendering excision inadvisable, it was judged best to await events. The wound healed in about a fortnight when splints were discarded and massage and active movements were commenced. This treatment was carried out for about a month with a gradually increasing range of movement of the wrist and fingers, but the patient began to complain of a feeling of numbness and tingling in his ring and little fingers. This was followed by characteristic ulnar paralysis affecting these fingers and in a minor degree the adductors of the thumb. It was obvious that if permanent injury to the ulnar nerve was to be avoided the offending bone must be removed.

On Dec. 11th, 1906, ten weeks after the accident, the semilunar bone was excised by a vertical incision over the projection. It was firmly imbedded in fibrous tissue, the ulnar vessels and nerve being displaced outward. The wound healing by first intention, massage and movements were begun again. When seen on Jan. 24th last the ulnar paralysis had almost disappeared, there being only slight flexion at the interphalangeal joints of the little finger; the movements of the wrist were good and daily increasing in strength and range, so that the patient has now begun to do light work.

Manchester.

[1] THE LANCET, July 6th, 1895, p. 30.

### SUCCESSFUL PERFORMANCE OF KRONLEIN'S OPERATION.

BY WILLIAM GEORGE SYM, F.R.C.S. EDIN.,
OPHTHALMIC SURGEON TO THE ROYAL INFIRMARY AND TO THE EYE, EAR, AND THROAT INFIRMARY, EDINBURGH.

As cases in which the orbital cavity has been laid open from the outer side and a tumour removed from the depths of the orbit with success are not very numerous it is well perhaps to record each instance.

I was consulted in July, 1906, by a woman, aged 50 years (sent by Mr. R. H. Hunter of Leven), who stated that 13 years ago she had received a blow, not a very severe one evidently, on the left eye and that shortly after this accident

the eye began to protrude and had done so more and more as time went on. On examination of the patient, who was a thin but healthy looking woman, very nervous in her manner, I found that the left eye was completely pushed out from the orbit by a semi-solid or solid growth. The eye could not be pushed back at all into the orbit. There were no bruit and no thrill and there was no general engorgement of neighbouring vessels, so that one was able to exclude traumatic aneurysm from the diagnosis. The tumour was

quite firm in consistency. The eye was pushed almost directly forwards, with a little inclination both upwards and inwards. The lids, greatly stretched as they were, were barely able to cover the cornea; vision was still good and the fundus showed no vascular changes, so that the tumour could not be one involving the nerve primarily. There was not much pain but a good deal of both bodily and mental uneasiness. The appearance of the patient caused her great distress.

Realising that any attempt to remove the tumour from the front, and yet to save the eye, was perfectly certain to be a failure, I invoked the assistance of Mr. F. M. Caird and together we laid open the orbit according to Krönlein's method on July 26th. As soon as the wedge of bone marked off had been slipped back one was struck by the freedom with which one could explore the whole cavity of the orbit. By means of the finger a fairly large tumour, which filled practically the whole orbital cavity and particularly its lower and outer parts, was defined and removed. It was completely encapsuled, and at one part, just posterior to the outer rim of the orbit, the bony surface was slightly eroded. So soon as the tumour was removed the globe slipped back into its normal situation, the now ridiculously lax eyelid hanging over it. It was not necessary to suture the bones in any way; a few firm stitches through the soft parts kept the flap of bone in perfect position. The wound healed rapidly, leaving very little mark indeed; and the patient now, on correction of an error of refraction, possesses vision equal to ⅔. The only faults which can be found with the appearance are a slight convergence, hardly to be noticed, a very small amount of enophthalmos from the complete absorption (by pressure) of the soft tissues of the orbit, and a complete paralysis of the external rectus. This last was caused by the pressure of the new growth and is not due to damage to the muscle during the operation. Knowing that that result sometimes follows Krönlein's operation we were prepared to pick up and stitch the external rectus muscle, but had no opportunity. We could find no muscular tissue whatever when we entered the orbit; the whole muscle appeared to have atrophied completely under the long-continued pressure of the tumour.

The new growth was examined and proved to be a melanotic sarcoma. In what tissue it took its rise it was impossible to be certain. The accompanying photograph of the patient just before operation was kindly taken for us by Mr. George L. Chiene.

The patient was shown at a meeting of the Edinburgh Medico-Chirurgical Society on Dec. 5th, 1906.

Edinburgh.

# Medical Societies.

## PATHOLOGICAL SOCIETY OF LONDON.

*Two Cases of Cystinuria with Excretion of Diamines.—The Excretion of Creatinin in Pseudohypertrophic Muscular Dystrophy.—A Case of Sulph-hæmoglobinæmia.—An Apparatus for Estimating the Electric Conductivity of Small Quantities of Liquids.—A New Case of Alkaptonuria.*

A MEETING of this society was held on March 5th, Dr. F. GOWLAND HOPKINS, Vice-President, being in the chair.

Dr. F. H. THIELE read a paper on Cystinuria with Diamines. He said that the report referred to a man, aged 28 years, who had cystin and cadaverin in the urine and putrescin in the fæces. There were no other amido acids in the urine. It was shown by experiment that diet had very little effect on the amount of cystin excreted but a marked effect on the diamines. The administration of tyrosin did not result in its being excreted unchanged in the urine, as occurred in some other cases, such as that of Loewy and Neuberger. Cystin when administered by the mouth was excreted in the urine as sulphates and other less oxidised sulphur compounds. In another case which was examined the urine contained no tyrosin or other mono-amido acids besides the cystin. There was, however, cadaverin.

Dr. E. I. SPRIGGS related some observations upon the Excretion of Creatinin in a case of Pseudo-hypertrophic Muscular Dystrophy. Very small amounts of this substance had been found in the urine in this disease by previous observers using the method of Salkowski-Neubauer, even as low as a decigramme in a day. The excretion of creatinin had assumed special interest of late since Folin had shown that its amount in the urine was almost constant and independent of the proteid metabolised, and Klercker and others had found that creatin taken by the mouth was not passed out as creatinin. Although it had usually been regarded as a product of the metabolism of muscle these results showed that the question required further investigation. In this patient, a man of 50 kilogrammes, in St. George's Hospital, the total excretion of nitrogen and of creatinin was estimated for four days upon an ordinary diet with meat, for four days upon a starch and cream diet containing very little proteid, and for three days upon a diet containing sufficient proteid but no meat. The creatinin was estimated by Folin's method. The quantity of creatinin excreted was less than normal for a man of the patient's weight, being in the last two periods only 9 to 12 milligrammes per kilogramme body-weight, the normal for a thin man being, according to Folin, 25 milligrammes per kilogramme. The smallest quantity excreted in one day was 0·45 gramme. The patient was wasted and the total nitrogenous metabolism was low, but not relatively so low as the creatinin, for the percentage of the total nitrogen excreted as creatinin upon an ordinary diet was only half that of Folin's subjects upon a meat-free diet. Dr. Spriggs thought that as in this disease the amount of muscle tissue was known to be much diminished both in the atrophied and in the apparently hypertrophied muscles, and as the figures showed that the creatinin was diminished absolutely as well as relatively to the total nitrogen, these results gave support to the view that creatinin was derived from muscular tissues to a greater extent than from other tissues. On a starch and cream diet the amount of creatinin remained constant, but the percentage of the total nitrogen which its nitrogen formed approached that of a normal individual in the same circumstances. This was attributed to a relatively greater use of creatinin, furnishing tissues in proteid starvation.

Dr. A. E. RUSSELL and Dr. J. B. LEATHES showed the Spectrum of the Blood of a patient suffering from Cyanosis and Sulph-hæmoglobinæmia. The patient was an unmarried woman, aged 30 years. Shortly after puberty she had suffered from chlorosis of a very severe type but it was not until 1899 that the cyanosis appeared. She was under Dr. F. J. Smith's treatment at the London Hospital on several occasions and he recorded her history and condition up to 1899 in the Clinical Society's Transactions.[1] After the onset of the cyanosis she became subject to remarkable attacks of paroxysmal dyspnœa, in which the respiration-rate varied from one of extreme slowness to a very rapid shallow rhythm. During the period of slow respiration she was unconscious. She gradually improved, but in August, 1899, periostitis of the right tibia developed and later of the left. Free incision down to the bone gave great relief to the pain. In 1905 she was an in-patient at St. Thomas's Hospital under Dr. H. W. G. Mackenzie, where she had many attacks of paroxysmal dyspnœa, the respirations increasing in rapidity, up to 180 per minute and more. Sometimes they were uncountable. At the end of such an attack she would breathe with extreme slowness—about twice a minute—and appeared to be in a moribund condition, with a most intense cyanosis affecting the cheeks as well as the lips. During the attacks the pulse was regular and about 80–90 per minute. A very large number of these attacks occurred. Under a Weir Mitchell course she improved greatly, the attacks ceased, and she gained one and a half stones in weight. She was admitted into the West London Hospital for chronic ulceration of the right leg in June, 1906, and was operated on by Mr. Aslett Baldwin, who found the whole shaft of the tibia sclerosed throughout, the condition suggesting a congenital syphilitic origin. A channel was chiselled out throughout the length of the bone with great relief of the pain. After reading the paper by Dr. G. A. Gibson and Dr. C. C. Douglas on Microbic Cyanosis[2] the blood was examined by the spectroscope and the band of what was thought to be methæmoglobin was seen. This, however, on re-examination in the light of the paper by Dr. Samuel West and Dr. T. Wood Clarke,[3] was found to conform to that of sulph-hæmoglobin. Whilst in the West London Hospital she had had one or two minor attacks of dyspnœa. The cyanosis was now not very marked and the colour was more

[1] Clinical Society's Transactions, vol. xxxiii., 1900, p. 5.
[2] THE LANCET, July 14th, 1906, p. 72.
[3] THE LANCET, Feb. 2nd, 1907, p. 272.

like that of a bilberry than that of ordinary cyanosis. She suffered from habitual constipation but under the influence of a diet containing only a small quantity of proteid with abundance of carbohydrates and fruit the bowels were acting more freely and her condition was distinctly improved. The blood when in the London Hospital showed a chlorotic type, but later examinations have shown a red corpuscle count varying from 4,700,000 to 5,000,000 per cubic millimetre, a leucocyte count varying from 5300 to 7000, and hæmoglobin from 75 to 100 per cent.—Dr. WOOD CLARKE said that the amount of sulphuretted hydrogen in the presence of an oxidising agent required to produce the spectrum of sulph-hæmoglobin was very small and suggested that it was the presence of this oxidising agent which gave rise to the change in the blood. He had not, however, been able to show what this oxidising agent might be.—Dr. WEST said that the clinical features of these cases were very striking and he thought that the condition must be very rare, for it was a condition which could not be easily overlooked.

Dr. O. F. F. GRUNBAUM said that the value of the electric conductivity of the renal secretion by itself and the conductivity of the serum by itself had been shown to be of but little value. Wright and others had, however, demonstrated that the ratio of the quantity of salts in the urine and serum should approach 1·2. When markedly below this for any length of time and when the patient was upon normal diet the probability of renal disease was considerable. The apparatus he showed had but one point which he believed to be novel—namely, the form of the electrodes, which consist of discs of platinum about three millimetres in diameter covered with platinum black and let into rings of ebonite, the surface of the ring and of the platinum being flush. The two electrodes could be finely adjusted, and the usual distance between them at which he worked was less than a millimetre, and this permitted of the conductivity of very small quantities being accurately estimated, because the capillary attraction allowed the fluid to cover the platinum and to spread beyond it over the ebonite. He recognised the great difficulty of working with absolute units and therefore had not attempted to, but simply estimated the relative conductivity of the two fluids. The rest of the apparatus consisted of a Wheatstone bridge, an alternating current producer, and a telephone, which replaced the galvanometer. Until a large number of observations had been collected and cases had been followed for some years the value of the method would remain debateable.

Dr. ARCHIBALD E. GARROD and Dr. WOOD CLARKE described a new case of Alkaptonuria. A female child, aged three years, was brought for darkening of the urine and dysuria. She was an only child. The parents were normal and unrelated. The colour of the urine was noticed on the second day of the child's life. The urine darkened on standing and gave all the reactions of alkaptonuria. Lead homogentisate was obtained by the simple method, and from this homogentisic acid, ethyl homogentisate, and di-benzoyl-homogentisamide were formed. The $\frac{H}{N}$ quotient was in accord with that found in other cases. No uroleucic acid could be isolated from the urine.

## LIVERPOOL MEDICAL INSTITUTION.

*Cleido cranial Dysostosis of Maire and Sainton.—Recurrent Paralysis of Ocular Muscles.—Suppuration of the Wound after Cataract Extraction.—Malaria.*

A MEETING of this society was held on Feb. 28th, Mr. FRANK T. PAUL, the President, being in the chair.

Dr. J. HILL ABRAM showed a typical case of the disease described by Maire and Sainton under the name of Cleido-cranial Dysostosis. The patient was a boy aged 16 years. The clavicles were absent, the cranium was typically brachi-cephalic, and the anterior fontanelle was still largely open. The distorted vertex with the deficient development of the facial bones led to a superficial resemblance to cretinism; the absence of any solid œdema in the subcutaneous tissue and the considerable standard of intelligence attained showed that cretinism might be excluded.—Dr. A. G. GULLAN said that certain features led him to believe that the lad was to a certain extent a cretin—viz., the full face, arched eyebrows, thick neck, short stature, lordosis of the spine, and the typical waddling gait, full abdomen, with unfolded umbilicus, undeveloped genitals, and absence of hair from the pubes, the coarse hair of the scalp and the characteristic broad hands all pointed to a degree of athyroidism. The lad, though intelligent, was certainly emotional. Dr. Gullan considered that the combination of cretinism with the absence of the clavicles made the case even more interesting.—The PRESIDENT and Dr. E. T. DAVIES also discussed the case.

Mr. R. J. HAMILTON showed a case of Recurrent Paralysis of the Ocular Muscles in a Man the subject of Hæmophilia. The condition was always preceded by severe headache which lasted for some hours and the paresis lasted from four to six months. The first attack occurred four years ago and followed a very severe and almost uncontrollable hæmorrhage, the result of tooth extraction. Mr. Hamilton suggested a neuritis induced by the severe anæmia as a possible explanation of the paralysis.—Dr. K. A. GROSSMANN agreed with Mr. Hamilton that the case was one of peripheral (neuritic) origin. He had recently observed a similar condition occurring after influenza, recovering and reappearing after a second attack of influenza. After the second attack of paralysis the patient recovered, then relapsed, and finally got gradually well. Similar post-influenzal neuritic attacks, followed by alternate improvement and relapse, had been observed in other parts of the body.—Sir JAMES BARR and Mr. T. H. BICKERTON also spoke.

Mr. RICHARD WILLIAMS read a note on Cataract Extraction, mainly in reference to suppuration in the wound, and reported the case of a man, aged 88 years, in which the suppurative process had been arrested by the application of a 1 per 1000 solution of perchloride of mercury after a weaker solution (1 in 3000) had failed. He suggested that these cases were not due to the introduction of infective material from without but to abnormal activity of the ordinary micro-organisms of the conjunctiva in certain abnormal conditions of the nervous system.—Dr. GROSSMANN, Mr. BICKERTON, Mr. E. M. STOCKDALE, and Mr. HAMILTON discussed the case.

Dr. J. LLOYD ROBERTS read a paper on Malaria based on the study of 124 consecutive cases under his care in the tropical wards of the Royal Southern Hospital. The etiology of malaria was considered and the life history of the various kinds of parasites met with in man was described, with lantern illustrations of each at varying stages of its existence. The correlation between their life cycles and the clinical symptoms was demonstrated. Lantern slides were shown of the temperature charts of the different kinds of malarial fever—benign tertian, quartan, malignant tertian, and malignant quotidian—and the diagnostic differences between the benign quotidian and the malignant quotidian charts were pointed out. The symptoms of the disease were next described and the diagnosis was considered with reference to the history, source of infection, physical examination, type of fever, anæmia, leucopenia, great proportional increase of the large lymphocytes, and particularly the discovery and recognition of the parasites and of the pigmented leucocytes. Cases were mentioned illustrative of the differential diagnosis between malaria and such diseases as pulmonary tuberculosis, suppuration, ulcerative endocarditis, and hepatic abscess. In dealing with the treatment Dr. Lloyd Roberts showed charts illustrating the effects of quinine. The modes of administration suitable for different types of disease and different degrees of severity respectively were discussed and an experiment was described to demonstrate how quinine acted on the parasite. In addition to the lantern slides several microscopical specimens of parasites were exhibited.—Dr. W. CARTER thought that the time had come when the word "malaria," which kept up the superstition that bad air caused the disease, should be abandoned for a name more in accordance with absolutely established facts. Among the unsolved problems of the disease were: (1) the occurrence of attacks years after removal from mosquito-infected areas; (2) the apparent immunity of exceptional individuals, even after repeated bites; and (3) the impossibility, in some cases, of administering quinine owing to its effects being more poisonous than those produced by the parasites. Among the more troublesome symptoms were (1) the occasional occurrence of persistent vomiting, rendering it necessary to administer the quinine by the rectum or hypodermically; (2) the supervention of coma, which in his experience was best relieved by freely blistering

the shaven scalp: unless (3) it was accompanied by a continuous and very high temperature, when cold baths were in addition required. In some cases of chronic cachexia, with acute exacerbations, the utmost benefit followed a course of Warburg's tincture when quinine in other forms could not be borne or failed to relieve.—Dr. C. J. MACALISTER, Mr. J. BRADLEY HUGHES, Dr. W. T. PROUT, and Dr. WYLEY also discussed the paper.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 15th, Dr. J. Lindsay Steven, the President, being in the chair.—Dr. Walter S. Lazarus-Barlow read a paper on the Histological Diagnosis of the Endotheliomata and their Bearing upon Modern Research Work in Cancer. He said that the endothelial cell, as found in horizontal sections of pleura and other serous membranes, was characteristically round or slightly oval, with a large round nucleus and a large amount of protoplasm. The nucleus was characterised by a small amount of chromatin, with an accumulation in the centre connected by delicate strands of chromatin with an accumulation arranged round the membrane of the nucleus. These peculiarities gave to microscopic sections of the new growths a characteristic brilliancy. There was also a tendency on the part of the cells to arrange themselves so that lumina of more or less definite formation were produced. The endotheliomata were divided into (1) those in which the proliferation of endothelium took place towards the lumen of the tube that was lined by the endothelium (enthelioma); (2) those in which the proliferation took place peripherally (perithelioma); and (3) those in which the two types of growth were conjoined (peri-enthelioma). The endotheliomata also required a differentiation into the hæmal and the lymphatic varieties, since in certain instances the lumina present in the endotheliomata contained blood, but in many instances the differentiation was difficult. He then indicated the distinguishing histological features between the endotheliomata on the one hand and angeiosarcomata and certain varieties of spheroidal and squamous-cell carcinomata on the other. He believed that a considerable number of the growths found in the breast and in the cervix uteri, which were described as spheroidal-cell carcinoma and squamous-cell carcinoma respectively, were in reality examples of lymphatic perithelioma. The cases to which he was referring were those in which masses of cells were present with a central degenerated material. It had been usually considered that this degenerated material had arisen from a necrosis of the central portion of a formerly completely solid mass of cells, but he pointed out that under such conditions there should be a gradation between the outermost and undegenerated cells and the central degenerated mass. On the contrary, in the cases under consideration there was a sharp differentiation between the cellular portion and the débris, and in addition a definite endothelial lining, such as one was accustomed to meet with in the ordinary blood-vessel or lymphatic, often bounded the proliferated cells on their internal aspect and completely shut them off from the central débris. He urged further that these cases were identical in histological appearance whether they were derived from the breast or the cervix and were best explained on the view that they were lymphatic peritheliomata. In the case of growths affecting the cervix it was frequent for cell-nests to be absent, and he suggested that in common practice a diagnosis of squamous cell carcinoma really depended upon the presence of cell nests or, failing them, upon a knowledge of the site of the primary growth. But looking at the question from a theoretical point of view at least five different varieties of squamous-celled carcinoma might exist. Starting from a point in the Malpighian layer one might have theoretically a squamous-celled carcinoma consisting (*a*) entirely of Malpighian cells; (*b*) one containing Malpighian and prickle cells; and (*c*) one in which Malpighian, prickle, and keratinous cells (cell-nests) were represented. Similarly, from a point starting in the prickle layer one might have (*d*) a pure prickle cell carcinoma; and (*e*) a prickle and keratinous carcinoma. A pure keratinous carcinoma probably did not exist. There was no doubt that all these five varieties of squamous-cell carcinomata were recognisable. The difficulty of diagnosing between them and the endotheliomata was not the same in all cases. The real difficulty lay between the endotheliomata and the pure Malpighian and the pure prickle-cell carcinomata. It was clear that if an endothelioma were growing rapidly it would be composed of cells tending to resemble those of the Malpighian layer, whereas, if growing more slowly, it would consist of cells tending to resemble those of the prickle layer. He laid great stress upon the existence of the space between the cells in which the prickles were normally found in forming a diagnosis. He believed that even in the purest form of pure Malpighian carcinoma evidences of this prickle space were to be recognised. Apart from this there were differences in the shape of the nucleus, in the amount of cell body, and also in a certain "mistiness" of a pure Malpighian squamous cell carcinoma section which was very different from the brilliancy of endothelioma sections. This difference between mistiness and brilliancy clearly depended upon the ease or difficulty with which light was transmitted through the section. He had examined the microscopic sections that had been accumulated in the Middlesex Hospital since 1900 and had found that approximately 10 per cent. of cases of breast cancer and 10 per cent. of cases of uterine cancer should be regarded as endotheliomata. In other regions the endotheliomata were less common. With regard to the bearing of these observations on clinical questions he had investigated the histories of the cases from which the microscopic examinations had been made and had found that a very large proportion (68 per cent. in the case of the breast or uterus) of the cases which he had histologically diagnosed as endothelioma were associated with exceptionally wide dissemination of metastases. Thus there was evidence that the endotheliomata were amongst the most malignant of new growths. On the other hand "parotid tumours" and certain tumours of the cerebral meninges showed that growths which were histologically identical with those that had been described might be non-malignant in respect of the fact that they did not tend to recur after removal. It was clear, therefore, that endotheliomata might be intensely malignant or non-malignant, and the important question at the present time, bearing in mind the amount of work that was being done on the subject of mouse cancer, was to determine in what class of growths this latter should be included. A recognition of the true character of mouse tumours was necessary for determining whether work on these growths was attacking the cancer question at its very heart, which would be the case if they were carcinomata, or whether it concerned a relatively uncommon form of new growth—namely, the endotheliomata. Moreover, supposing that the majority of mouse tumours were ultimately considered to be endotheliomata there remained the question as to whether they belonged to the intensely malignant or to the non-malignant variety. A microscopical demonstration was given to illustrate the points to which reference was made.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on March 1st, Dr. J. R. T. Conner, the President, being in the chair.—Mr. W. H. Kelson read a paper on Diseases of the Ear, Nose, and Throat in Relation to General Diseases. He said that the sore-throat of scarlet fever might be of very varying severity, from an erythema to deep ulceration, affecting also the post-nasal space and nose but rarely the larynx; it sometimes took on a diphtheroid form which was only distinguishable from true diphtheria by the absence of the Klebs-Löffler bacillus, and it sometimes left a perforation in the pillars of the fauces and cicatrices suggestive of syphilis. Suppurative disease of the middle ear was exceedingly common, probably 12 per cent. of otitis media suppuration being due to scarlet fever, and this might come on at two periods—either early as a direct extension from the throat or during the desquamative period, and had been thought then by some to be due to toxins similar to those producing scarlatinal nephritis. Caries and necrosis of the bony parts of the ear were common. In diphtheria the fauces and larynx were covered with membrane and also often the nose; there was also a chronic nasal form known as fibrinous rhinitis. Diphtheritic affections of the external auditory meatus were very rare, and such affections of the middle ear were not common—in fact, many of the cases so described had doubtless really been scarlatinal. Paralysis of the palate coming on usually between the second and sixth week was common, but after severe forms of diphtheria considerable sluggishness of movement owing to infiltration might occur and should not be confounded with true diphtheritic paralysis. In that form of influenza which attacked the respiratory passages acute rhinitis was common and affections of the anterior frontal and sphenoidal sinuses occurred, as well as catarrhs of the larynx and pharynx, occasionally

accompanied by hæmorrhage. Neuralgic pains were very common. Otitis media suppuration was a frequent complication; it might come on at any time during the disease, and often extended to the mastoid process. Mr. Kelson next referred to the connexion between nasal polypi and asthma and between nasal obstruction and bronchitis. He then discussed the dry form of pharyngitis and rhinitis and the form of middle-ear suppuration which occurred in diabetes, the epistaxis associated with kidney disease, the olfactory and auditory auræ of epilepsy, and the convulsive movements of the muscles of the larynx as shown in the epileptic cry. He said that hysteria very often claimed the throat, nose, and ear as the seat of its troubles. Anæsthesia and hyperæsthesia of the nasal mucous membrane sometimes occurred, affecting certain spots and, more often still, the pharyngeal mucous membrane. Hysteria might sometimes be suspected from the ease with which a laryngological and pharyngeal examination could be made; it was to be remarked that, however anæsthetic these parts might appear to be, foreign bodies were never found to enter the trachea and set up pneumonia in the same way as when organic anæsthesia was present. In the larynx the most common manifestation was hysterical aphonia owing to inability properly to adduct the cords. The appearances as seen in the laryngeal mirror were most varied, from the irregular action of the muscle and loss of power to accommodate. The cords wobbled about and the glottis assumed all sorts of shapes; the volitional power of speech was lost but the ability to cough remained.

CLINICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on Feb. 19th, Dr. J. F. Le Page, the President, being in the chair.—A short paper was read by Dr. A. Knyvett Gordon, medical superintendent of Monsall Hospital, on the Treatment of Enteric Fever. He pointed out that while he had nothing new to say on this subject he wished to emphasise the importance of certain measures which deserve attention in private practice. He advocated a thorough cleansing of the mouth in all cases, with removal of carious teeth when present, pointing out that the so-called characteristic dry and brown tongue was more often due to oral sepsis than to typhoid fever alone. He deprecated the practice that so often obtained of feeding a patient on an exclusively milk diet, whether it was digested or not, pointing out that the typical typhoid stools were in the majority of instances due to milk dyspepsia and not to enteric fever alone. He then discussed the conditions under which carefully prepared solid food might be given in the acute stage. Whilst opposed to the use of the cold bath as a routine measure in all cases, he was of opinion that it was of great value in selected instances, chiefly in the cases where toxæmia was present without consequent degenerative cardiac changes. He was strongly opposed to the routine use of alcohol in small doses and to the employment of intestinal antiseptics which, as a rule, produced or increased diarrhœa. He pointed out the disadvantages of giving opium for every variety of abdominal pain, the chief of which was that it prevented an accurate diagnosis of perforation being made when it occurred. But if hæmorrhage from the bowels supervened it was necessary to give opium in large doses and to take this risk. In perforation the patient's only chance lay in prompt laparotomy with suture of the intestine; it was not advisable to wash out the abdominal cavity.—Dr. R. W. Marsden, whilst agreeing with the outlines (including early feeding in selected cases) of the treatment of typhoid fever described by Dr. Gordon said that, in his opinion, some form of hydrotherapy should be used as a routine measure in the management of the disease. He was averse to the withholding of such treatment until a certain temperature had been attained.—Dr. J. P. Williams emphasised the necessity of carefully watching for distension of the bladder, as even in moderately severe cases distension might occur without pronounced symptoms of retention and the timely use of the catheter would occasionally improve the general condition of a case which appeared to be doing badly.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 20th, Dr. H. J. Neilson being in the chair.—Dr. Herbert Tilley (London) delivered an address on Chronic Hoarseness. He said that passing such cases in review in chronological order the earliest would be congenital syphilis. Such a child might not be able to cry and the difficulty of sucking and swallowing might seriously impair the nutrition. In addition to mercurial inunction instillation of a 5 per cent. solution of cocaine in castor oil into the nasal passages just before feeding facilitated breathing and thus respiration and recovery. Laryngeal papillomata were pointed out to be liable to be confused with diphtheria, the great point of distinction being that in the former there was a history of hoarseness of gradual onset. Functional aphonia in young females was next discussed and then cases of simple chronic laryngitis, which were always bilateral, were considered. Singer's node, or teacher's nodule, was described with illustrations and the mode of its production under the strain of modern educational conditions was explained. From this it was an easy passage on to the simple pedunculated fibroma of adults. Hoarseness due to specific causes might be divided causally into three groups—namely: (*a*) tuberculous laryngitis with ulceration in its later stages. The local appearances of this affection were fully gone into and the importance of absolute rest to the voice in early cases was emphasised. Much relief was obtained by the insufflation of orthoform before meals, which made swallowing possible with a minimum of pain. Where the disease was quite extensive pain might be greatly relieved by the removal of parts of the larynx or epiglottis. (*b*) The appearance of the ulcers occurring in the larynx in tertiary syphilis was described as being usually well-defined, with a clean-cut edge and often a central slough. Antispecific treatment generally produced rapid improvement but there was a danger of subsequent cicatricial contraction. (*c*) Malignant disease of the larynx was liable to be overlooked because the symptoms were frequently only those of alteration in the voice. The degree of malignancy and consequent duration of the disease varied within the widest possible limits. The prospect of cure in the earlier stages of epithelioma of the vocal cord was very good, as the disease might remain for a long time limited to endolaryngeal regions. Dr. Tilley also referred to paralysis of the vocal cords and outlined the method of localising and identifying the lesions causing them.

CHELSEA CLINICAL SOCIETY.—A meeting of this society was held on Feb. 19th, Dr. J. D. E. Mortimer, the President, being in the chair.—Mr. G. A. Garry Simpson read a paper on Suppurative Disease of the Middle Ear in which he drew attention to the difficulties which the surgeon had to contend with in the management of these cases. The tympanum was a most unfavourable situation for an abscess to form in, as owing to the floor being on a lower level than the drum membrane it was very difficult to get efficient drainage; moreover, there was everything, such as warmth and moisture, to favour the growth of micro-organisms. The prognosis depended on the way in which the treatment was carried out, the micro-organism causing the trouble, and whether the disease followed one of the infective fevers. About from 60 to 70 per cent. of staphylococcal infections got well if properly treated from the onset, but the streptococcal were much more liable to become chronic. If a bulging drum membrane indicated the presence of fluid he advocated early incision. A bath of warm hydrogen peroxide 5–10 vols. was a valuable means of loosening tough masses of discharge in chronic cases, which treatment should be followed by syringing with warm solution of boric or carbolic acid (1 in 80); and finally the instillation of three or four drops of rectified spirit of wine. If granulation masses did not recur after removal and there was no evidence of dead bone the above treatment properly and thoroughly carried out would cure the most obstinate cases.—Mr. R. H. Tribe read a paper on Rheumatism and Heart Disease in Children.

GLASGOW SOUTHERN MEDICAL SOCIETY.—A meeting of this society was held on Feb. 28th, Dr. T. Forrest, Vice-President, being in the chair.—Dr. J. Hogg Macdonald read a paper on the Physio-psychology of Hallucinations. In introducing his subject Dr. Macdonald spoke of the part played by hallucinations in history, instancing the case of Joan of Arc, the epidemic hallucinations of the Middle Ages, and also referred to the instances of hallucinations of many illustrious men—Martin Luther, George Fox, Descartes, Socrates, van Helmont, Goethe, Cowper, Pope, Napoleon, and Oliver Cromwell. Having defined a hallucination as a "subjective perception" or a "perception without a corresponding objective stimulus," he proceeded to describe the forms and characteristics of the hallucinations of the different senses. This was followed by

an explanation of the mechanism of hallucinations—their mode of origin and site of production. Dr. Macdonald held that though in the majority of cases hallucinations were secondary to the intellectual content, yet they were the primary phenomena of mental aberration in a much larger proportion of cases than was generally supposed. The truth was that when hallucinations obtruded themselves suddenly and without warning upon the consciousness they frequently gave rise to secondary mental disturbances of a very pronounced nature—so pronounced, indeed, as to overshadow and often completely to hide the primary hallucinatory phase. Dr. Macdonald held that the sensory centres alone could be regarded as the anatomical site of hallucinations. A psychic or peripheral origin could not be denied in some cases, but even in these the hallucination only arose after intervention of the sensory centres where the memory images were conserved. The influence of hallucinations upon the conduct and attitude of individuals was next described, and it was shown how hallucinations have varied in different ages and races according to the dominant ideas of the day and people. As regards the question: "Are hallucinations compatible with a state of sound mind?" Dr. Macdonald concluded that when the sufferer failed to recognise the hallucinations as an anomalous product of his brain, when he allowed his thoughts to be directed from their ordinary course, and his conduct to be regulated by the hallucinatory mental content he was no longer of sound mind.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on Feb. 13th, Dr. A. Hill Griffith, the President, being in the chair.—Mr. Southam showed two specimens of Cystine Calculi, one removed from the bladder of a male, aged 32 years, by suprapubic lithotomy, and the other passed per urethram by a female, aged 22 years. In both instances the urine presented evidences of cystinuria.—Dr. D. Orr and Dr. R. G. Rows gave a lantern demonstration of Lesions of the Cranial Nerves in General Paralysis of the Insane and of those produced experimentally in Animals by the Action of Toxins. It was pointed out how these lesions always commenced in the intramedullary part of the nerve, exactly at the point where the neurilemma sheath was lost, leaving the extramedullary part unaffected. The change in the nerve was described as a primary degeneration of the myelin, leading to a variety of appearances—viz., round or oval globules, long moniliform filaments, and short or elongated fusiform masses.—Dr. Eugene S. Yonge read a paper on Obstruction of the Periglandular Vessels of the Nasal Mucous Membrane in Relation to the Production of Mucous Polypi. It was generally admitted that a mucous polypus of the nose was essentially and in its earliest stage a patch of mucous membrane which had become œdematous and that the pedunculated appearance which polypi commonly exhibited was the result of physical causes acting on the primary patch of swollen œdematous mucous membrane. Various theories had been advanced to account for the primary œdema which represented the first stage of a mucous polypus, but no one of them had been considered to be a sufficient explanation of the process. The theory which Dr. Yonge presented for consideration was that the initial œdema, which occurred in the mucous membrane and was the first stage in the process of polypus formation, was a serous infiltration of the tissues, the result of the obstruction of certain definite capillaries and veins. Pathological and experimental evidence was advanced in support of this contention and several specimens illustrating the point were exhibited.—Other specimens were exhibited as card specimens.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Feb. 19th, Dr. A. Mantle being in the chair.—Dr. H. C. Major read a paper entitled "Some Reflections of an Old Microscopist." After expressing his great pleasure at being once more amongst his old friends Dr. Major went on to say that after working almost continuously with the microscope since 1871 he thought it would interest the members of the society if he gave them some of his experiences and ideas gained during his 35 years' work. He wished to refer particularly to the examination of tissues, normal and pathological. He pointed out that the advance in this department was due not so much to the improved instruments as to the developments in microscopical technique and to the improved methods of hardening, cutting, and staining. In this respect the work of the late Carl Weigert stood out prominently. Discussing pathological specimens Dr. Major pointed out that the pathologist was not always infallible. The surgeon in most instances did not require the assistance of the pathologist to guide him as to the use of the knife, but it was just in those cases where he did require such assistance that the pathologist found his difficulty. Dr. Major drew special attention in this respect to uterine curettings, the examination of which in his hands had been usually attended with grave difficulty. As regards cancer, Dr. Major was full of hope and he quoted the late Sir John Burdon Sanderson's remarks, "that whilst 30 years ago you could with difficulty find anyone possessing the qualities for genuine scientific work, such men were now forthcoming in every hospital." The great army of earnest, able, well-trained workers could not, would not, be vanquished. For those who suffered a better time had come; a better time still was coming.—The paper was discussed by Dr. Goyder, Dr. H. J. Campbell, Dr. Mantle, Dr. T. J. Wood, Mr. W. G. Burnie, Mr. R. Mercer, and Dr. A. Bronner.—Dr. Major then replied.—Dr. G. T. Beatton read: (1) Notes of a Functional Case simulating Cerebellar Disease; and (2) Notes of a case of Malignant Disease of the Liver.—Mr. Mercer read notes of a case of Pulmonary Embolism following Ovariotomy.

# Reviews and Notices of Books.

*Clinical Lectures on Diseases of the Lungs.* By JAMES ALEXANDER LINDSAY, M.D. R.U.I., F.R.C.P. Lond., Professor of Medicine, Queen's College, Belfast; Physician to the Royal Victoria Hospital, Belfast. Second edition, enlarged and rewritten. London: Baillière, Tindall, and Cox. 1906. Pp. 509. Price 10*s.* 6*d.*

IN reviewing the first edition of this work we expressed the favourable opinion which we had formed regarding its contents and a study of the pages of the second edition has confirmed our views as to the high standard of Dr. Lindsay's writings. The present volume is confined to the consideration of diseases of the lungs and about half the lectures which it contains are new. The lectures on heart disease contained in the first edition are for the present omitted, as it seemed to the author (as he states in his preface) better to attempt to cover the field of pulmonary disease from the special point of view contemplated by him rather than to embrace a wider field less completely.

The chief characteristic of the work is its very practical nature. Pathological questions are only alluded to incidentally and with no attempt at complete exposition. The clinical point of view is throughout kept constantly in mind and the problems discussed are considered in the manner and order in which they arise in actual practice. The physical examination of the lungs and pleura is described as well as it is possible to do so in words. The actual means of eliciting physical signs and the correct interpretation of them can, of course, only be acquired after long and varied practical experience, nevertheless, a text-book such as we are now considering will prove of great assistance to the student and to the practitioner. In the early stages of work in the out-patient rooms and wards the student easily becomes puzzled in regard to the terms employed to describe the variations in percussion sounds and a similar remark applies to the alteration of breath sounds and the numerous varieties of adventitious sounds which may be heard. Unfortunately, much confusion has arisen from want of uniformity by different observers in the use of such terms as resonance, clearness, dulness, bronchial breathing, tubular breathing, crepitations, râles, and so on. Many attempts have been made to introduce a definite classification but hitherto without success. Dr. Lindsay's remarks on this subject are well worthy of study and his explanation of physical signs goes a long way towards removing the obscurity which exists.

The attention of the student should be especially directed

to Lectures V. and VI., on the Study of Pulmonary Symptoms. Much may be learned in the examination of patients suffering from diseases of the lungs by observation of cough, dyspnœa, stridor, and other symptoms. For instance, in regard to cough, the observer may note its quality, the time of its occurrence, whether it is accompanied by expectoration, whether pain is present, and whether cough is followed by vomiting, suffusion of the face, convulsions, or unconsciousness. Numerous hints are given by Dr. Lindsay on these points which will prove of great value in practical work.

The lectures on the various forms of pulmonary disease contain a large amount of information which will be directly useful to the practitioner. Differential diagnosis is dealt with at length and treatment is considered in the light of the most recent advances. The prevention and treatment of pulmonary tuberculosis naturally receive their due meed of attention. In speaking of the sanatorium treatment of this disease Dr. Lindsay remarks: "Two things are absolutely indispensable if sanatorium treatment is to achieve its best results—viz., (*a*) a proper selection of cases for treatment; and (*b*) the recognition of the fact that the discharged patient, who has undergone 'arrest' of his disease, or 'economic cure,' is not in a fit state to return to his former avocation but requires further guidance and assistance, for which end some form of 'tubercular colony' is indispensable." The first proposition is generally accepted; the second, however, has been challenged by some observers who maintain that the subsequent life of the patient should depend more upon the wage-earning capacity of the patient than upon the nature of the employment. The outcome of the controversy will probably prove that the correct solution lies in the mean of the two opinions, that whilst a return of the patient to a notoriously unhealthy occupation is to be deprecated, with high wages ordinary indoor employment is to be preferred to an open-air occupation with low wages. We take this opportunity, however, of protesting against the term "tubercular colony." In THE LANCET of May 27th, 1899, p. 1442, we stated our reasons for adopting the term "tuberculous" rather than "tubercular" in connexion with disease caused by the bacillus of tuberculosis. To call a "colony" tubercular is obviously wrong and an undesirable sacrifice to brevity.

We have perused Dr. Lindsay's book with much pleasure and can cordially recommend it as a thoroughly practical and trustworthy guide on the subject of diseases of the lungs. The student will find it an immense help to him in his clinical work, whilst the practitioner can rely upon it as a useful book of reference.

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*The Bacteriological Examination of Water supplies.* By WILLIAM G. SAVAGE, B.Sc., M.D. Lond., D.P.H., Medical Officer of Health and Public Analyst, Colchester; late Lecturer on Bacteriology, University College, Cardiff; Bacteriologist to the Cardiff and County Public Health Laboratory, &c. London: H. K. Lewis. 1906. Pp. 297. Price 6*s.* 6*d.* net.

THIS book is a very welcome review of the present position of that extremely complex and important subject, the bacteriological examination of water-supplies. Written by an admitted authority, who in his official positions has had to give advice as to water-supply to various public bodies, the subject is treated in no academical spirit but from a thoroughly practical standpoint. A very great deal of information is collected, both as to the bacterial flora of water which indicate pollution, and as to the methods which have been employed in the detection and identification of these indicators of contamination, but the great value of the book lies in the critical estimation of the value of the statements made and of the analytical processes described. The reader is not left to wander through a maze of statements and descriptions all apparently of equal validity but is guided by the author to those which, on the basis of his own experience and investigations, he believes to be most trustworthy and important. That all bacteriologists will agree with the opinions expressed is hardly to be expected and a method with which a worker is thoroughly acquainted will often yield better results than a possibly superior one with which he is less familiar. The thorny subject of the meaning and value of the presence of aberrant bacillus coli-like organisms in water is treated critically but with a desire to arrive at some definite opinion which is of practical value.

The book is divided into two parts and an appendix. The first part deals with general questions of water bacteriology but is chiefly occupied with the bacteria of excreta, sewage, and soil and with the relative value which certain organisms have as indicators of pollution and of the time which has elapsed since pollution has occurred. There is now a general agreement that the three most useful test organisms are bacillus coli, streptococcus, and bacillus enteritidis sporogenes, and that of these three bacillus coli is by far the most important. Chapters are devoted to a consideration of the morphological, cultural, and chemical characters of these organisms as well as of organisms of the typhoid group and some other intestinal microbes. The author decides that it is possible to define a type of colon bacillus practically identical with that spoken of by Houston as "flaginac," which is of excretal origin and which keeps its main characters unchanged even after a long sojourn in water; also that this type is a trustworthy indicator of excretal contamination and that its presence, considered with due regard to the numbers in which it is found, is the most important fact in passing judgment on a water-supply. The streptococci are also regarded as valuable indicators of excretal contamination but of distinctly less importance than the bacillus coli and the author is inclined to agree with Houston that they probably indicate *recent* contamination.

Part II. is occupied with the practical examination of water samples and we are glad to see that great stress is laid on a careful topographical investigation of the source of the water and on the value of regular examinations extending over long periods. The methods for the isolation and identification of the bacillus coli and bacillus typhosus are fully given and with the same critical discrimination of their relative value to which attention has already been called. The book is dedicated to Dr. A. C. Houston, to whom bacteriologists owe a debt of gratitude for researches of great value relating to water-supplies and allied subjects.

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*The Nursling.* By the late PIERRE BUDIN, M.D., Professor of Obstetrics, University of Paris. Authorised translation by WILLIAM J. MALONEY, M.B., Ch.B. Edin. With an Introduction by Sir ALEXANDER R. SIMPSON, M.D. Edin. With 111 diagrams in colour and other illustrations. London: The Caxton Publishing Co. 1907. Pp. 199. Price 21*s.* net.

THE English translation of Dr. Pierre Budin's monumental work, "The Nursling," was published in this country almost at the moment of the author's death and although the history of his life's work is told in these pages it is not by his work as an author that this brilliant obstetric physician will be remembered. He will be remembered for all time as the inventor of the first practical system for grappling with the nineteenth-century problem of infant mortality.

In 1892 Pierre Budin was authorised to organise at the Charité the first "consultation for nurslings." A few years later he founded a similar system at the Maternité and in 1898, when he was appointed obstetric physician to the Clinique Tarnier, for the third time he organised a system of "consultations" on his now famous lines. To these "consultations" the mothers take their infants to be examined and weighed, and in a special register all

necessary information is recorded, such as the weight, the progress of teething, illnesses, and other details which are requisite for the plotting out of the statistical curves which are great features in Dr. Budin's system. Every effort is made to encourage breast-feeding and in those cases in which the mother's supply is inadequate for the infant's needs the deficiency is made good by artificial feeding, sometimes with the happy result that "abundance develops out of insufficiency." In those cases in which breast-feeding alone is manifestly impracticable a variable quantity of sterilised milk is provided, which the mother obtains from the institution every morning. Sometimes a mother has no milk at all and then her infant is supplied with a sufficiency of sterilised milk in small bottles, each containing enough for one feed. Each litre of milk thus provided costs the public authorities about 2½*d*. With reasonable pride the author states in his work that he was able to conduct a "consultation" of 79 infants at the cost of about £100 per annum. As regards the general health of the infants attending at the clinics it is stated that the nurslings enjoyed complete immunity from rickets, infantile scurvy, and the dyspepsia alleged to arise from the use of undiluted milk. As to mortality the following are the figures. From the institution of the consultations in 1892 to June of 1899 435 nurslings passed through Dr. Budin's hands. Out of this number only 32 died, giving a mortality of 73 per 1000. It must, however, be noted that these figures only include the cases of infants who had been under his care for "at least one month." Among these 32 deaths there was only one due to summer diarrhœa. During July, 1898, diarrhœa caused 53 per cent. of all the deaths among nurslings in Paris. To quote the author's own words, "What was happening here, at the Clinique Tarnier, during this time?" and to quote his laconic reply, "As there were no deaths consequently our mortality was zero." Dr. Budin has thus demonstrated that the scourge of summer diarrhœa can be effectively met by the expedient of sterilisation of milk. At all events he attributes his success in this direction to the systematic use of milk which has been sterilised and not diluted or altered in any other way.

It is not unlikely that critics of Dr. Budin's methods may seek to explain his remarkable results on other grounds and to attribute his success to the spirit of emulation which he inspired in the minds of the mothers, to the hygienic regimen which he demanded, to the other subsidiary principles of infant management upon which he insisted, and above all to the fact that his method of "one bottle one meal" made overfeeding well-nigh impossible. There are many authorities in this country who impute every conceivable symptom of malnutrition to the employment of boiled milk. There are others who would find a panacea for all evil in the accurate and mathematically exact modification of cows' milk. Dr. Budin's fight with infant mortality is a scathing commentary on such narrow-minded conceptions. If his figures show anything they show that victory is to those who make a study of the less considered details of infant management—regularity, cleanliness, and accuracy in quantity; they show that infants can survive and remain in perfect health in defiance of all that scientific dietetics can teach us. If we know anything of the functions of digestion, of nutrition, of the physiological development of the nursling, and of the comparative biology of the calf and of the infant, we know that the mammary secretion of the cow, in its natural unaltered condition, is utterly and fundimentally at variance with the physiological needs of the human offspring. It must, however, be carefully borne in mind that the author excludes from his statistics all infants who have not attended at his clinic for "at least one month." Would it be uncharitable to suggest that the newly born infant who can survive a month's ordeal of undiluted cows' milk might survive anything? A consideration of this view almost invites a paraphrase of the old story of the philosopher Bion who, when he was shown the votive offerings hung up in a Greek temple by those who had been saved from shipwreck by prayer, asked, Where are the names of those who have been drowned? Where among the striking statistics that adorn the pages of this beautifully illustrated work is the record of those who were wrecked before the end of thirty days?

Dr. Budin supplies many a useful hint in his series of lectures, none more so perhaps than that which refers to multiple nursing by one woman. A wet nurse can often supply far more milk than is required by one nursling and when this is the case the superfluity can be utilised by several others; for instance, he relates how on one occasion 54 nurslings were tended by 14 wet nurses, with the result that the "wet nurses improved and the weaklings steadily increased in weight." At the Maternité every fortnight the amount of milk given by the wet nurses was estimated and it was found that on an average the milk supplied was 1657 grammes (very nearly three pints) per diem by each nurse.

The series of lectures which compose this book are extremely interesting reading from start to finish: they represent the record of practical and successful work. In no sense can they be regarded as a scientific treatise or representative of the last word on the scientific feeding of infants, but they are invaluable all the same.

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*The Toxins and Venoms and their Antibodies.* By EM. POZZI ESCOT. Authorised translation by ALFRED I. COHN, Phar.D. New York: John Wiley and Sons. London: Chapman and Hall, Limited. 1906. Pp. vii.–101. Price 1 dollar or 4*s*. 6*d*. net.

WHY this translation was ever made we cannot pretend to guess. The original brochure—costing, if we remember rightly, 1.50 francs—is a slight and superficial summary of existing knowledge on a farrago of poisonous substances—alkaloids, toxalbumins, and bacterial toxins; in short, all animal and many vegetable poisons. In places it is little more than a catalogue of names applied by original discoverers to little known toxic substances. Metchnikoff's and Ehrlich's views are mentioned but scarcely discussed; indeed, whenever we seem to be on the point of getting a little beneath the surface we are referred to other works, generally written by the author. The statements contained in the book are by no means accurate. Thus, cobra antitoxin is said to act efficiently against the poisons of all known venomous snakes; tetanus antitoxin is stated to act by immunising the cells of the body, not by combining with the toxin; in the section on diphtheria antitoxin is used at one time for the curative serum and at another for the specific antitoxic body contained in it, and we are told that diphtheria antitoxin was first prepared by Guérin and Macé, which is probably not true in either sense. Names are, of course, a stumbling block: Ransom appears as Rauson; Oryetes nasicorius represents Oryctes nasicornis; Gram is Gramm; and the snake bungarus is bungurus. We do not doubt that the original work was composed in excellent French; the translation can only by courtesy be called English. The relative pronoun never appears without a precedent "and"; singular nouns are followed by plural verbs and *vice versâ*; words and phrases such as "functionation," "neoformed," and "organised plastidulary granules" sparkle in this setting. Here and there sentences are almost incomprehensible. We puzzled long over the statement that a "haptophore is that which enables the toxin to attach itself to any cellular element whatever, and which it then renders non-toxic by means of the other or toxophore group." There is no index to the volume. We have tried hard to find something to

praise in the book; its sole merit, so far as we can discover, is its brevity.

## LIBRARY TABLE.

*The Health of our Children in the Colonies.* By Dr. LILIAN AUSTIN ROBINSON. Second edition, revised and enlarged. London: Longmans, Green, and Co. 1906. Pp. 215. Price 2*s.* 6*d.*—This is an excellent little work and of a thoroughly practical nature and this, the second edition, is a distinct improvement on the first. Although ostensibly written for mothers residing in the colonies there is no reason why it should not be used by a far wider circle of readers, for as a matter of fact the general hygienic care of infants and children is the same all the world over, particularly in respect of dietetic and disciplinary details. Special attention is paid in these pages to mental development and early training, subjects which are daily becoming of greater importance now that child study is firmly established on a scientific basis. The common disorders of infancy and early childhood are dealt with in a manner sufficiently simple to be understood by mothers with little experience and the suggestions for treatment and diagnosis are reasonable and safe. The chapter on Nursing Emergencies is excellent. That on the Artificial Feeding of Infants is too short and the treatment of digestive complications is entirely inadequate. Otherwise we regard Dr. Lilian Robinson's little book as excellent.

*The Prevention of Cancer and the Relation of that to Some Other Diseases and Calamities.* By C. R. B. KEETLEY, F.R.C.S. Eng. London: Baillière, Tindall, and Cox. 1907. Pp. 38.—This little book contains (1) a reprint of a lecture delivered before the students of the West London Post-Graduate College in the spring of 1905; (2) an address delivered at the opening of the present winter session of the same college; and (3) some remarks on recent papers dealing with the study of cancer in mice and rats. The two addresses on the prevention of cancer are mainly expansions of Mr. Keetley's interesting paper on the subject which appeared in THE LANCET of August 31st, 1901. The fundamental theory is that dirt, whether physical, mental, or social, tends to produce, or at least to help in the production of, cancer, tubercle, and venereal disease. With regard to the prevention of cancer Mr. Keetley insists once again on the value of cleanliness and without entering upon the still vexed question of whether cancer is or is not due to a parasite introduced from without it is quite certain that cleanliness in everything will at least do no harm and is a simple measure within the reach of most of us. We must allow ourselves to make one correction in a statement on p. 34. Keats was not a student at St. Bartholomew's but at the then conjoined hospitals of Guy's and St. Thomas's.

*The Pocket Guide to the West Indies.* By ALGERNON E. ASPINALL. London: Edward Stanford. 1907. Pp. 316. Price 6*s.*—The West Indies, whether those in our own possession or in that of other nations, have been much in evidence lately, owing to the appalling catastrophes which overtook the island of St. Vincent and the town of St. Pierre in 1902 and the town of Kingston in 1907. They have always been favourite places of resort for those blest with the leisure and time to visit them, and those who are in this happy position will find Mr. Aspinall's little book most useful. He gives plenty of information about the islands, both as they were in the past and as they are to-day, and furnishes the reader with a list of books dealing in detail with the islands. If we might add one to the list we recommend anyone intending to go to the West Indies to read Esquemeling's delightful "History of the Buccaneers of America," that is to say, if he can get a copy. It was originally written in Dutch but a translation into English was made in 1684–85 and was reprinted by Messrs. Sonnenschein in 1893.

*Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, No. 25. On the Importance of Larval Characters in the Classification of Mosquitoes.* By Captain S. R. CHRISTOPHERS, M.B. Vict., I.M.S. New series. Calcutta: Office of the Superintendent of Government Printing, India. 1906. Pp. 18 and 3 plates. Price 3 annas, or 9*d.*—Of the immature stages of mosquitoes other than anopheles we unfortunately, as the author remarks, know very little. He has himself previously described the ovum and larva of most of the common anopheles mosquitoes of India, and in the memoir under review he narrates what has been determined regarding the larval character of a number of genera of culicidæ other than anopheles. Captain Christophers first briefly mentions features which are common to all larvæ and the characteristics of the head, enlarged thorax, and the eighth and ninth abdominal segments. He then notes the larval features characteristic of many of the genera and provisionally draws attention to several groups which he considers from the dissimilarity of the larval characters alone might well form separate ones. Captain Christophers describes minutely five such groups and shows that the most important variations occur in the respiratory trumpet of the nymph, in the antennæ, syphon tube, mental plate, feeding brushes, and anal papillæ of the larva, in the form of the ovum, in the arrangement of ova in rafts or otherwise, and in the form of the raft. The preparation of this memoir, which is illustrated by three excellent plates, must have entailed a large amount of painstaking work and is worthy of the highest commendation as being a most valuable addition to our knowledge of the subject.

*The Next Street but One.* By M. LOANE. London: Edward Arnold. 1907. Pp. 309. Price 6*s.*—Miss Loane is one of the Queen's nurses and has already given an account of her work in another book entitled "The Queen's Poor." She is obviously a very intelligent woman, possessed of a sense of humour which should go far to lighten the inevitable discomforts and sorrows which she must meet in her occupation. The book now before us consists of a series of papers dealing with the poor and their outlook on life. These papers are full of delightful incident and one passage gives a very clear idea of the way in which education is considered among the class for whom it is provided by law at the expense of the ratepayers. "Intuitive knowledge ranks far higher than the result of study: to have been taught is almost a direct proof of having been 'more than common' stupid. 'Well,' says the doctor to me, 'and whad's the marrer wirree?' 'Pretty thing that to ast, and him a doctor,' said an old country neighbour scornfully. This explains why quacks are highly valued and highly paid." Any medical man who has ever worked as an out-patient physician or surgeon will appreciate at its right value the truth of this story. The chapter on Home Industries and their Effect on the Home is admirable. Altogether Miss Loane's latest work is as well worth reading as her first book and that is saying much.

*The Polytechnic Cookery Book.* By M M. MITCHELL, M.C.A. London: Longmans, Green, and Co. 1907. Pp. 242. Price 2*s.*—On the whole we think that this is a very good book. There are a great variety of recipes and we are glad to see one for roasting meat in the only way in which it can be roasted properly—i.e., in front of the fire. The instructions given might, however, in many instances be more clearly expressed than they are. For instance, p. 124: "Potatoes should be cooked in their skins to keep in all the nutriment ....." This, of course, is quite true, though not one cook in a hundred will boil potatoes without peeling them unless she is specially instructed to do so. But on the

following page (p. 125) we find a recipe headed, "Boiled potatoes," which begins thus: "Choose the potatoes of an equal size, wash them well, peel them thinly ....." Thus on two consecutive pages the learner is given two opposite instructions. Again turning to p. 124, we find in the directions for cooking vegetables: "The water may be softened by adding a quarter of a teaspoonful of carbonate of soda to four or five points (*sic*) of water." Apart from the obvious misprint, it should be made clear by the author what she means by "carbonate of soda." If the average pharmaceutical chemist is asked by the average customer for carbonate of soda, he invariably gives the bicarbonate, which is what the customer really means. Pure carbonate of soda is almost unknown outside the laboratory and crude carbonate of soda, alias washing soda, generally contains free alkali. It is true that when the bicarbonate is put into boiling water it is converted into carbonate, so that for cookery it comes to much the same thing whether the carbonate or the bicarbonate is used, but in the next edition the point should be made clear. One more criticism. Rice should never be served as a border to curry but should always be on a separate dish. We have not made these criticisms in any carping spirit but because there is nothing which spoils so many dishes as inattention to details. Cookery books are for the uninstructed and should afford no room for doubt. This book, if used by an intelligent cook, will be found to be as good a small treatise on the subject as has yet been published.

## JOURNALS AND MAGAZINES.

*Transactions of the American Ophthalmological Society.* Forty-second Annual Meeting, New York City, 1906. Vol. XI., Part 1. Hartford: Published by the Society. 1906.—The members of this important society now number 173, residing in all parts of the United States, with two honorary members. Of the former 84 attended the forty-second annual meeting and no less than 35 papers were announced for reading and discussion. We here mention some of the more interesting. Dr. Charles Oliver gives the results of his study of 3436 cases of senile cataract operated upon at the Wills Hospital in Philadelphia, Pennsylvania, in regard to their sex and age, occupation, and social condition. Accidents causing cataract and secondary cataracts have been excluded. The age limit was 40 years. Philadelphia, almost a seaport city, receives annually a large number of immigrants, particularly Welsh, English, German, Irish, Italian, Austrian, and Russian, and it was found to be possible to group the cases into native which included 1901, and foreign-born of which there were 1535, Irish forming the largest proportion (55 per cent.), then Germany (30 per cent.), then in their order England (10 per cent.) and Wales (3 per cent.) and Scotland (2 per cent.). Among the native-born Pennsylvania, in which State Philadelphia is situated, gave 65 per cent., New Jersey 15 per cent., Delaware 10 per cent., and there were 5 per cent. each from the States of Maryland and New York. The average age of operation rose in successive decades from 62·2 to 66, the average of the whole being 63 years in 35 years' time. The average age of women in all cases was also about 63 years. As regards occupation, out-of-door labourers, such as boatmen, farmers, miners, and porters, gave the highest average of age for the operation—viz., 66 years; agents, clerks, and professionals, 65 years; bookbinders, compositors, edgetool makers, engravers, shoemakers, and tailors, 63 years; whilst blacksmiths, glassblowers, puddlers, and other workers in superheated materials gave by far the lowest age for the operation—viz., 58 years. As regards social condition, 65 per cent. of the male cases were married, 30 per cent. had been married, and 5 per cent. were single; 50 per cent. of the female cases were widows, 40 per cent. were married, and 10 per cent. were single. Dr. Frederick Cheney of Boston reports ten cases of extraction of cataract in the capsule, the results of which seem to leave him rather dubious of the advisability of practising the extraction of cataract in the capsule so successfully adopted on natives by Major Henry Smith of the Indian Medical Service. The same may be said of the experience of Dr. Myles Standish who also employed on Americans the plan so successful in Major Smith's hands in East Indian natives. Dr. G. E. de Schweinitz of Philadelphia read an interesting paper on the Signs of Persistent High Arterial Tension and their Diagnostic and Prognostic Import. Dr. Arthur E. Ewing of St. Louis, Missouri, contributes a paper on the Bacillus Pyocyaneus, in which he demonstrated the virulence of this micro-organism in the eye, especially affecting the cornea; its longevity, which is considerable; and the possibility of rendering animals immune by mild inoculations through the epithelium either of the skin or of the mucous membrane. Dr. Emil Gruening reports two cases of disease of the frontal sinus in which the modern operation was successfully performed, very little, if any, trace of the operation being subsequently visible. Dr. Robert Randolph of Baltimore, Maryland, presents to the congress his bacteriological examinations of the conjunctival sac in 100 cases of typhoid fever and 48 cases of lobar pneumonia occurring in the wards of the Johns Hopkins Hospital. Dr. Wilbur B. Marple records a second case, the report being accompanied by excellent illustrations, of a case of retinitis proliferans with development of a system of blood-vessels upon the optic nerve. Dr. Marple reported a similar case to the society in 1901.

*The Edinburgh Medical Journal.*—In the February number Dr. Herbert P. Thompson writes on Prophylaxis of Scarlatinal Nephritis and recommends that patients should be confined to bed and kept on a fairly strict diet for three weeks and that urotropine should be administered thrice daily to prevent urinary infection. Dr. P. J. Cammidge upholds the value of his "pancreatic reaction" as an indication of disease of that gland, and Dr. P. C. Smith discusses the symptoms and signs of physical degeneracy. Mr. J. P. Lockhart Mummery emphasises the importance of early diagnosis in cancer of the rectum and the value of the sigmoidoscope for this purpose, and Mr. J. Rutherford Morison gives a record of major operations performed at the old Royal Infirmary, Newcastle-on-Tyne, with notes and comments thereon.

*The Scottish Medical and Surgical Journal.*—The February issue opens with a glimpse into the future of midwifery teaching as told in a dream to Dr. J. W. Ballantyne and revealed by him to the Edinburgh Obstetrical Society. Dr. Henry H. Robarts writes on Spinal Anæsthesia and discusses the comparative value of tropocaine, novocaine, and stovaine for this purpose, and Dr. T. M. Burn-Murdoch records some cases treated by Bier's method of passive hyperæmia. Dr. Alexander James gives reasons for opposing any attempt to make pulmonary tuberculosis a notifiable disease.

*The Dublin Journal of Medical Science.*—The February number contains only two original articles. Of these the more important is that by Dr. Charles Greene Cumston of Boston on the Surgical Treatment of Bronchiectasis. The conclusions arrived at are not favourable to such interference in the majority of cases, but mobilisation of the thoracic wall by resection of ribs is recommended in some instances, especially cases occurring in children in which the upper lobe of the lung is affected. Dr. T. Gillman Moorhead describes a case of chyliform ascites.

*The Birmingham Medical Review.*—In the January number of this magazine Dr. W. A. Potts writes on the non-operative treatment of malignant disease and notices such remedies as trypsin, coumarate of sodium, oleate of sodium, and, above

all, preparations of violet leaves. The action of these last, here called "liquor violue glucosidue" (misprint?), is considered by Dr. Potts to depress muscular activity and blood pressure; some antiseptic effects are also produced. Mr. H. Wippell Gadd supplements this paper with another showing that the glucoside of viola odorata is still unknown. A learned paper by Professor E. W. Wace Carlier on Nuclear Activity gives a summary of much recent work on this subject.

# New Inventions.

## A "LONGARM" FOR USE IN RETINOSCOPY.

THIS instrument is designed to take the place of the trial frame when practising retinoscopy. Though primarily intended for examining children it may be used generally and has this advantage, that the surgeon need not rise from his seat to change the trial lenses. The surgeon, seated four feet from the patient, holds the "longarm" in his left hand and stretches it out until the celluloid disc at its end rests gently against the patient's brow. This disc is very thin and

resilient and carries three headed pins for holding a lens in place. After trying a lens it can be withdrawn and a second one substituted by simply drawing the longarm towards the right hand. Children are not frightened by its use if they are encouraged to look through the peephole. The rod is graduated both in inches and centimetres and is fitted with slides engraved with test stars, so that the instrument can be used for finding a patient's near point.

It is manufactured by Messrs. Raphaels, Clerkenwell-road, London, E.C. J. H. TOMLINSON, M.R.C.S. Eng., Egham. L.R.C.P. Lond.

# BRITISH MEDICAL BENEVOLENT FUND.

AT the February meeting of the committee grants amounting to £171 were made to 16 of the applicants, two cases being passed over as unsuitable for help. An abstract of the cases assisted is appended.

Daughter, aged 55 years, of late M.R.C.S., who practised in Wiltshire. Has been obliged to give up her time to her mother, recently deceased aged 80 years, whose only income was a small pension. Recommended by Dr. Henry Hetley. Voted £6 immediately and £12 in monthly instalments.

Widow, aged 29 years, of L.S.A., who practised in Derbyshire. Left penniless at husband's death from new growth a few months ago and was obliged to sell furniture to defray the expenses of his illness. Proposes to train as a maternity nurse. Three children, youngest aged 13 months. Recommended by Mr. R. H. Luce, honorary local secretary, and voted £10 in one sum.

Widow, aged 43 years, of M.R.C.S., L.S.A., who practised in London. Quite unprovided for at recent and sudden death of husband. Three children, aged 13 to seven. Recommended by Professor Howard Marsh and by Dr. F. de Havilland Hall (Vice-Presidents). Voted £15 in three instalments.

Widow, aged 45 years, of M.D. St. And., F.R.C.S. Edin., who practised in London and in Surrey. No income, but will probably shortly obtain help from the Society for the Relief of the Widows and Orphans of Medical Men. Two children, neither self-supporting. Recommended by Mr. Edmund Owen (Vice-President) and by Dr. J. Wayte. Voted £5.

Widow, aged 56 years, of L.R.C.P., L.R.C.S. Irel., who practised in London and abroad. Applicant has lost her income through the failure of a bank and is unable to obtain work on account of her age. Dependent on a married son earning a very small salary. Recommended by Mr. Reginald Harrison (Vice-President). Voted £12 in 12 monthly instalments.

Widow, aged 54 years, of L.R.C.P. Edin., who practised in London. No income; no children. Endeavours to support herself as a midwife but earnings are falling off owing to competition. Relieved six times, £35. Recommended by Mr. Jonathan Hutchinson (Vice-President). Voted £5.

Daughter, aged 61 years, of late M.R.C.S., L.S.A., who practised in Cornwall. No income; used to support herself by a boarding-house but was obliged to give it up. A friend pays for the rent of two rooms. Relieved eight times, £96. Recommended by Dr. Palemon Best. Voted £12 in 12 instalments.

Widow, aged 40 years, of M.D., who practised in Hampshire. Left unprovided for at husband's death eight years ago. For some time past has given services in exchange for a home for herself and son. Relieved eight times, £95. Recommended by Dr. J. Mitchell Bruce (Vice-President). Voted £12 in 12 instalments.

Widow, aged 71 years, of M.D. Glasg., who practised in Hampshire. Dependent on the rent of a small house which will be vacant in a few weeks' time. Four children, but unable to help. Relieved four times, £21. Recommended by Dr. A. W. Orwin. Voted £5.

Widow, aged 58 years, of M.R.C.S., who practised in Surrey. Has lost her capital through unfortunate investments and endeavours to support herself by letting rooms but finds difficulty in obtaining lodgers. Six children, unable to help. Relieved once, £12. Recommended by Sir Samuel Wilks (Vice-President). Voted £12 in 12 instalments.

Widow, aged 51 years, of M.B. Glasg., who practised in Liverpool. No income; endeavours to support herself by needlework; failing health; three children barely self-supporting. Relieved twice, £30. Recommended by Dr. J. B. Thorburn. Voted £12 in 12 instalments.

L.S.A., aged 63 years, who practises in London but whose earnings have greatly decreased owing to competition. Four children, none self-supporting. Relieved once, £18. Recommended by Dr. J. Mitchell Bruce (Vice-President). Voted £18 in 12 instalments.

Widow, aged 38 years, of L.R.C.P. Edin., L.S.A., who practised in Yorkshire. No income; two children, aged ten and eight. Endeavours to support herself by letting lodgings, but her rooms have been empty for three months. Relieved once, £5. Recommended by Dr. Walter Broadbent, honorary local secretary, and by Mr. Herbert Lund. Voted £5.

Daughter, aged 51 years, of late M.R.C.S., L.S.A., who practised in London. Quite broken down in health and dependent on her half-sisters, who can only just support themselves. Relieved three times, £32. Recommended by Dr. Theodore Fisher. Voted £12 in 12 instalments.

Daughter, aged 23 years, of late M.R.C.S., who practised in Wales. No income and indifferent health. Relieved seven times, £73. Recommended by Sir Victor Horsley, F.R.S. (Vice-President). Voted £6 in one sum.

Daughters, aged 59 and 56 years, of late M.R.C.S., L.S.A., who practised in Gloucestershire. Were comfortably provided for but lost their capital through the dishonesty of a friend. Only income now £8 per annum each. Relieved three times, £44. Recommended by Dr. William Carter. Voted £12 in 12 instalments.

# Looking Back.

FROM

## THE LANCET, *SATURDAY*, March 7th, 1829.

### HOTEL DIEU.

SINGULAR AFFECTION OF THE SPEECH FROM APOPLEXY.

JUL. MEUNIER, 25 years of age, having, from his fifteenth year, been subject to periodical attacks of headach, which regularly returned every month, was, on the 5th of March, 1828, in consequence of a strong emotion of the mind, seized with an apoplectic fit, followed by incomplete paralysis of the right side. Being carried to the Hôtel Dieu, he was immediately bled, and the next day was in the following state; the power of motion in the right arm and leg was almost completely restored, their sensibility, and that of the right side of the trunk, was excited in such a manner, as to produce, on the least touch, the most violent convulsive movements, and almost intolerable pain. The patient complained of a violent pain across the forehead; sight, smell, and taste, were unimpaired. The right angle of the mouth was somewhat depressed; the motions of the tongue were perfectly free, and he spoke very fluently, but his pronunciation exhibited a very curious deficiency; for although he was perfectly sensible of what he intended to say, he could not easily express his ideas, and constantly confounded, or altered them, in a peculiar manner. Thus, instead of clef, he said *clique;* of douloureux, *difficile;* of rêve, *vers;* of eau, *eau;* of soupe, *soulium;* of bouillon, *boujon*, &c. It clearly appears from these specimens, that he was not at a loss at finding the words, but was only incapable of forming some peculiar combinations of letters. He was, at the same time, perfectly conscious of the mistakes he made; and when speaking very slowly, often succeeded in avoiding them. The patient was repeatedly bled, and gradually recovered, so that within three weeks he was able to leave the hospital.—*Journ. Hebdomad.*

THE LANCET.

*LONDON: SATURDAY, MARCH 9, 1907.*

## Legislation with regard to Pharmacy.

THE ancient quarrel between the Pharmaceutical Society and the drug companies is at last to be considered seriously by legislators. For many years the statutory body which represents the "chemists and druggists" has been vainly striving to secure for a Pharmacy Bill a hearing in the House of Commons. A year ago the Government took up the question of poisons legislation and a Poisons and Pharmacy Bill, for which the Earl of CREWE made himself responsible, passed through the House of Lords, but it was among the measures abandoned at the end of the session. At the present moment the Government's "Poisons and Pharmacy" Bill and the Pharmaceutical Society's Pharmacy Bill await their second reading in the House of Commons. The former is introduced by Mr. HERBERT SAMUEL, Under-Secretary for Home Affairs, who has given notice that after the second reading he will move for the appointment of a Select Committee to consider the more controversial of the issues raised. The Poisons and Pharmacy Bill contains a number of important provisions, but no longer attempts to deal with the practice of pharmacy by unqualified persons in the guise of limited companies. This, the chief grievance of the pharmacists and druggists, is dealt with in the Pharmaceutical Society's Bill, which was introduced recently in the House of Commons by Mr. WINFREY. The Government measure proposes to alter the law by making it legal for persons other than registered "chemists" to sell poisonous sheep dips and weed killers for use in agriculture and horticulture. Local authorities are to receive powers to grant licences to such unqualified traders in districts where the "reasonable requirements of the public" are not already satisfied by the facilities for purchase at the shops of druggists. This clause is likely to be strongly opposed by those who hold that no poisons should be sold except by persons having technical knowledge. Mr. SAMUEL'S Bill further provides that every "branch shop" of a pharmacist or druggist must be *bonâ fide* conducted by a qualified person whose name must be conspicuously exhibited. It is proposed that the Pharmaceutical Society shall have new powers to insist on definite courses of study being pursued before candidates may submit themselves for the qualifying examination. For long the absence of any compulsory curriculum has been recognised as a weak spot in the educational system of the craft. The society, it is provided, shall also have power to accept colonial diplomas in pharmacy and to divide the qualifying examination into two parts. At present there is no restriction whatever on the sale of hydrochloric, nitric, and sulphuric acids, or of the soluble oxalates, including "salt of lemon." This defect of the law Mr. HERBERT SAMUEL desires to remedy by making regulations as to the labelling of these dangerous substances but without restricting their sale to registered druggists. It may be added that the Bill does not apply to Ireland and that a few verbal alterations of no great moment are made in the schedule of poisons.

The Pharmaceutical Society's Pharmacy Bill contains several clauses similar to those in Mr. SAMUEL'S Bill. Thus it provides that every shop at which poisons are sold or medical prescriptions dispensed shall be under the *bonâ fide* control of a registered person whose name shall be entered on a register of shops to be kept by the Registrar under the Pharmacy Acts. Clauses relating to an educational curriculum, the division of the qualifying examination, and the acceptance of colonial certificates also appear in this Bill. The great difference between the two Bills—and the greatest cause of controversy—lies in the fact that the Pharmaceutical Society is attempting to make limited companies conform as nearly as possible with the laws which are binding on individual persons engaged in the sale and dispensing of poisons. The society in its Bill proposes that companies shall not be allowed to use personal descriptions or "titles" implying registration under the Pharmacy Acts. An unqualified person who practises as an individual is prohibited from using such descriptions, but there are hundreds of one-man companies in Great Britain, formed expressly for the purpose of evading the law by persons who have not passed the Pharmaceutical Society's qualifying examination. This is a very real grievance to genuine pharmaceutical chemists, and a possible source of danger to the public, but the Government Bill makes no attempt to mitigate it. Lord CREWE'S Bill a year ago proposed to reserve the title of chemist for duly qualified persons in a manner similar to that now suggested by the Pharmaceutical Society, but the useful provision was rejected it may be remembered by a small majority in the House of Lords. The Pharmaceutical Society further argues that since an unqualified person may not keep a shop in which poisons are sold a limited company should only be allowed to do so if one of the directors be a registered person. This clause is also the subject of much controversy but it is a little difficult to see any other way in which to inhibit the bogus one-man company while not interfering with the existing business of a well-conducted joint-stock organisation.

It is important to notice also that both the Government and the Pharmaceutical Society desire to give to the public in the matter of the dispensing of medical prescriptions protection similar to that now enjoyed with regard to the sale of poisons. In the Government Bill this intention is not so clearly expressed as could be desired. At the same time the rights of medical practitioners to dispense prescriptions and to sell poisons are expressly reserved in the measure propounded by the Pharmaceutical Society. The Select Committee's task will be difficult, for the reason that the public interest clashes with the vested interests of the many drug companies which have come into existence since 1880 when the defects of the Pharmacy Act of 1868 were first made evident. The safety of the public will clearly be endangered if persons

who have failed to satisfy the pharmaceutical examiners are to be allowed, as in the past, to evade the law, both as regards practice and "title," by the simple expedient of forming a limited company. But in view of the reluctance of Parliament to interfere with existing interests, however improper their foundation, it is evident that the Pharmaceutical Society will have a hard struggle to go through before full justice can be secured for its licentiates.

## The Sanitary Evolution of London.

UNDER the suggestive title of "The Sanitary Evolution of London" a member of the late County Council, Mr. HENRY JEPHSON, has recently put forth an instructive history of the changes which have been brought about in the sanitary condition and administration of the metropolis in the course of the last 56 years, and the narrative is eminently deserving of careful study by all who are interested in the health and physical welfare of the nation. It commences with a description of the conditions which existed in the City at the close of the first half of the nineteenth century, a description very largely founded upon the reports furnished to the corporation by Mr. (afterwards Sir JOHN) SIMON, in discharge of one of his duties as medical officer of health of the district under its jurisdiction. Those conditions may be summed up as having been mainly determined by an absence of drainage, sewerage, or other fitting arrangement for the disposal of excrement or other forms of refuse; by a lack of any sufficient or well-regulated water-supply; by a terrible overcrowding of buildings upon area and of population within buildings; by the unchecked conduct of unwholesome or offensive industries; by the interment of the dead in intra-mural burial grounds already so overcrowded as to be not only a danger to health but an offence to common decency; and, most important of all, by the necessary consequences of such evils as displayed by the existence of a class of inhabitants dragged down by their surroundings to the level of the brutes. "It is no uncommon thing," wrote SIMON, "in a room 12 feet square or less to find three or four families styed together (perhaps with infectious disease among them), filling the same space night and day—men, women, and children, in the promiscuous intercourse of cattle. Of these inmates it is nearly superfluous to observe that in all offices of nature they are gregarious and public; that every instinct of personal or sexual decency is stifled; that every nakedness of life is uncovered there. Who can wonder at what becomes, physically and morally, of infants begotten and born in these bestial crowds?" Mr. JEPHSON acutely points out that the conditions thus described were the inevitable outcome of the fact that the increasing trade of the City required a constantly increasing amount of space for offices and warehouses, and that the occupancy of space in accordance with this requirement steadily diminished that which was available for residential purposes and thus compressed the industrial population within continually narrowing limits to which, under the iron grip of necessity, they were compelled to accommodate themselves at whatever cost. They were literally *adscripti glebæ*; both because their employers required them to be at hand and because no facilities for reaching more salubrious places of residence had at that time been brought into existence. Mr. JEPHSON further points out that the same conditions of non-residential occupancy and of compression of the population into a constantly diminishing space have extended from the centre of the metropolis to its more outlying portions, that they are still largely in operation, and that, although modified to some extent by comparatively recent reforms, they are still the main factors in the production of overcrowding and of all the sanitary and social evils of which it is the fruitful parent.

From what may be described as the worst period of which we have any exact or accurate knowledge, Mr. JEPHSON traces the history of the sanitary reform of London to the present day and points out with much clearness the extent to which it has been retarded by two great evils, the first of which has been the division of the metropolis into areas subject to a number of independent authorities, so that, until lately, it could not be treated as a whole; while the second has been the malfeasance of the persons who have acquired control over these areas and who, in many instances, have sought and obtained their positions for the very purpose of obstructing or preventing the changes which it was their duty to promote. Partly from the prevalence of an opinion that the rights of property were of more importance than the preservation of the public health, and partly from the corrupt pecuniary interest of many vestrymen in the maintenance of insanitary dwellings, every possible impediment has been placed in the way of much-needed reforms, and the most urgent official representations have too often been suffered to remain unheeded. It is obvious that when any particular nuisance was regarded as the concern only of the parish or other district in which it was established, it was far more easy for its proprietors, or for those who either directly or indirectly profited by its existence, to throw over it the mantle of their protection than would be the case at present, when local nuisances are subject to the powers of a central authority. It would hardly be too much to say that, if any nuisance were particularly flagrant or harmful, its owners would have been quite certain, a very few years ago, to spare neither time nor money in order to secure, for themselves or for their agents, a seat or seats on the local authority which would have jurisdiction in the matter. The methods of Tammany are of earlier date even than the city in which they first received their name.

Mr. JEPHSON chronicles how, after much delay and in spite of much opposition and discouragement, sanitary questions were gradually forced to the front, alike in Parliament and in public opinion, and how reforms were from time to time introduced and were found to fulfil the predictions of those by whom they had been advocated. He divides the 56 years covered by his narrative into decennial periods which have the advantage of passing from census to census and of affording material for comparing rates of mortality from the bases of recently enumerated populations. He not unnaturally has some tendency to glorify his office as a County Councillor and to attribute to the wisdom of his colleagues some results which have been long in preparation and which have really been brought about by the growth of knowledge and by the pressure of a slowly awakened public opinion. This, if a

weakness, is at least a pardonable one; and we believe that even the most severe critics of the late Council will be ready to admit that, under the wise guidance of Sir SHIRLEY F. MURPHY, its record in sanitary matters has been excellent. Still more do Mr. JEPHSON'S pages afford evidence of the indebtedness of the metropolis to the body of medical officers of health who, in their several districts, have constantly held aloft the banner of sanitary reform, have constantly preached, even if to deaf ears, on the text "*Salus populi suprema lex*," and have constantly striven against the almost universal ignorance, the disheartening stupidity, and the too frequent bad faith of the employers by whom their efforts ought to have been supported strenuously. It must not be forgotten that the difficulties which Mr. JEPHSON describes, as having existed and as having been at least partly overcome in London, are still rampant and unchecked over large districts of provincial England, are still swelling the bills of rural mortality, and are still placing difficulties in the way of the physical development of the young. For some time now it has been the common practice of the medical department of the Local Government Board to issue detached reports of inspectorial investigations concerning the sanitary state and administration of this or that locality; and in nearly all such reports the same story has been told. Here and there, perhaps, we may read of a medical officer of health, insufficiently paid and wholly unsupported, who accommodates himself to the conditions under which he is called upon to work and who shrugs his shoulders at evils which he cannot cure. In the majority of cases we find untiring efforts to teach the ignorant, to convince the stupid, and to arouse the interest of the apathetic. The impediments which now stand in the way of good sanitary administration throughout the kingdom are mainly two. One of them is the dependence of medical officers of health upon local bodies the members of which, in many cases, do not even desire to do what is right. The other, and perhaps the more important, is the control of municipal elections by political parties, or, more correctly, by political cries, of the value or truthfulness of which not one in a thousand of those who hear and are influenced by them can have any capacity for forming an opinion. If we could keep politics for Parliamentary elections and choose mayors and aldermen and councillors from considerations of business capacity, even the next census would be likely to indicate an improvement in the health of our people and a corresponding diminution in the rates of our mortality.

## Biology in Medical Education.

MEDICAL education at the present time is overburdened with a multiplicity of subjects which are recognised as being part of the curriculum, and it is therefore becoming necessary that such subjects as are not likely to be of use to the medical student in his future career as a medical man should be omitted, while all allow that of such subjects as embrace many branches of knowledge only the fundamentals should be taught. It may be argued, of course, that the medical man who deals, in so far as he can, with the great problems of life and death ought to be acquainted, at least in a primary fashion, with all branches of knowledge which deal with living matter. But elementary biology as at present taught is useless and, we may say, not elementary. It includes zoology and botany and it may be true that 20 years ago that which the medical student is now taught under the name of elementary biology was at that time the most general form of information available with regard to the properties of living matter. But now it has come to pass, owing to the enormous advances which have been made of recent years in the study of life processes, that the information forced upon the medical student under the name of elementary biology is information in relation to two very specialised branches of biology. A superficial acquaintance, which is all that most students acquire, or, indeed, an extended acquaintance with such matters as the circulatory and nervous system of Anodon, or of the numerous appendages of the cray fish, is not at the present day a suitable introduction to the study of any existing science, least of all to the study of those specialised branches of biological knowledge with which the medical man is afterwards concerned—namely, physiology and pathology.

There are, however, fundamental facts which apply to all living matter which are of the utmost importance and interest, and a knowledge of them has already in several instances facilitated the right understanding of living phenomena and the study of departures from the normal condition. The knowledge that living matter exists, and apparently *can* only exist, in the form of cells is available to everyone, although few seem to have realised that this is actually a fact. This knowledge leads naturally to the conclusion that all phenomena exhibited by living matter must be regarded, at any rate as far as the present methods of research will reach, as cell phenomena. Physiology is the observation and measurement of phenomena produced by groups of cells. Pathology deals with the phenomena exhibited by groups of cells that have diverged from the normal course of existence. All physiological and pathological problems, therefore, eventually come down to cell problems. The single cell is morphologically the simplest form of matter in which life can exist. The morphological complexity of the so-called higher animals and plants is due to the fact that they consist of large numbers of cells. It is a surprising circumstance that a large number of phenomena, many of them being of extreme complexity, are exactly similar in plants and animals in both their uni- and multi-cellular forms. These phenomena, common to all living things, are phenomena of primary and fundamental importance, such as division, growth, the reproduction of the species, the mechanism of hereditary transmission and reaction to various stimuli, including different poisons. The phenomena exhibited by the cells under normal and abnormal conditions are, in fact, frequently identical down to the most minute details and almost always identical in their general outline, no matter whether the cells be animal or vegetable. Now, as cells are the structural basis of life, and as all kinds of cells possess certain uniform properties and qualities, it is obvious that the study of any branch of biology should be preceded by a study of these common properties of all living matter. Twenty years ago practically nothing was known

with regard to these general attributes of living substance. Now there is a vast fund of this kind of knowledge at the disposal of anyone who seeks it. Yet what passes under the name of elementary biology in medical education teaches practically nothing with regard to these primary facts. At some period in his education the student may possibly learn that cells may exhibit the phenomenon of karyokinesis but it is improbable that he will have any exact knowledge with regard to this or any knowledge at all with regard to many equally important and fundamental processes. Indeed, it is quite likely that he will never even fully grasp that all the living substance of the body is composed of cells and that living matter exists in no other form. If he does realise this important generalisation it will not be because any stress will be laid upon the fact in his studies.

A radical change is suggested, by a consideration of the foregoing facts, with regard to the so-called "elementary biology" taught to the medical student with so much difficulty and sometimes at the expense of so much valuable time. What he learns now under the name of biology can be of no more use to him in his subsequent career than any other form of mental gymnastics. But there is a true elementary biology, a knowledge of which would be of the greatest value to him later in the process of education and in the proper understanding of his profession. The study of cytology, the form of elementary biology here suggested, though just as necessary, has hitherto not been included in the education of the zoologist or botanist any more than in that of the medical student. Cytology is a department of biological knowledge of which every medical student may learn something in his physiological studies, but the present teachers of zoology and botany are not generally in a position to teach anything but the specialised branches of biology which they have studied and accordingly at the present time there might be difficulty in organising the teaching of what is, speaking generally, the true elementary biology. The difficulties that might be encountered in making the change in the medical curriculum do not make the change less necessary or desirable, and we have therefore thought it well to put forward the suggestion in the hope that the teachers of the present-day student may be led to state what is their opinion as to the necessity for change in the direction which we have indicated, and also the best means by which such change may be brought about.

# Annotations.

"Ne quid nimis."

## NOMENCLATURE OF THE PROTEINS.

IT is time that some understanding was arrived at in regard to the meaning of the various names assigned to that great class of bodies which comprises the proteins, proteids, albuminoids, and their derivatives. Uniformity at least in regard to the use of terms is desirable, although it must be admitted that in the present state of our knowledge it is hardly possible to adopt strictly systematic names. Still, a great deal of confusion and misunderstanding would be removed by adopting even only a provisional system by which all might understand what is exactly meant by a given term. In the proceedings of the Chemical Society published on March 2nd a report on the subject appears containing certain recommendations which are the outcome of a prolonged consideration of the question by a number of chemists and physiologists. The original committee, we learn, was called into being by the Physiological Society and by the Publication Committee of the Chemical Society. Subsequently, a number of chemists interested in the subject took the matter into consideration in conjunction with a few representatives of the Physiological Society and finally a draft report embodying the conclusions arrived at was prepared by Dr. W. D. Halliburton and Dr. F. Gowland Hopkins, which was considered and amended at a meeting of the Publication Committee of the Chemical Society, at which the physiologists were present. The chief recommendations are five in number, one of them, however, referring exclusively to subclasses. The word "proteid," which is used in different senses in this country and in Germany, it is suggested should be abolished, while the word "protein" is recommended as the general name of the whole group of substances under consideration. This word is at present in use in America and Germany. It admits readily of the use of such derived words as "protease" and "proteose." The term "albuminoid," if used at all, should be regarded as a synonym of protein. We wonder whether analytical chemists will be expected to write in future in regard to one item of water analysis "protein ammonia" in the place of "albuminoid ammonia." The term "caseinogen," it is proposed, should be used for the principal protein in milk and casein for its derivative which is the result of the action of rennet. In the opinion of the committee the two principal proteins of the muscle plasma should be termed paramyosinogen and myosinogen; the term soluble myosin should take the place of von Fürth's soluble myogen-fibrin; and the term myosin should be restricted to the final product formed during rigor mortis. Albumins are regarded as the proteins of which egg albumin and serum albumin may be taken as typical examples. The word "albumen," used at one time to signify the white of egg, should disappear in favour of egg albumin. Globulins are now described as proteins, which differ from the albumins in solubility; they are more readily "salted out" of solutions than are the albumins. Examples occur in serum-globulin and fibrinogen and the class should also include certain derivatives of globulins such as fibrins and myosin. The committee has not suggested a term specifying proteins coagulable by heat. The term "sclero-proteins" is suggested to take the place of the word "albuminoid" in the limited sense in which most physiologists have been accustomed to use it. The class includes such substances as gelatin and keratin, the prefix indicating the skeletal origin and often insoluble nature of its members. Similarly the term "phospho-proteins" includes such substances as vitellin and caseinogen and the prefix nucleo used in relation to this class is accounted incorrect and misleading. "Nucleo-proteins," however, come under the class of conjugated proteins, substances, in fact, in which the protein molecule is united to a "prosthetic group." In this category also are the gluco-proteins (e.g., mucin) and the chromo-proteins (e.g., hæmoglobin). In regard to the derivatives of proteins, "protein hydrolysis" is the term to be preferred to proteolysis. "Meta-proteins" is the term suggested in place of albuminate (acid-albumin, alkali-albumin), which is objectionable, because, first, these products are obtainable from both albumins and globulins and, secondly, because the termination "ate" implies a salt. The term "proteose" includes albumose, globulose, and gelatose. The subdivision of these into proto-, hetero-, and deutero-proteoses has been considered, without, however, any alteration being suggested. The term "peptones," in the opinion of the

committee, should be restricted to the further products of hydrolysis, which differ from the proteoses inasmuch as they cannot be "salted out" from solution and usually resemble them in giving the biuret test. The polypeptides are classified under "conjugated proteins" and are described as products of cleavage beyond the peptone stage and consisting of two or more amino-acids in association. The subject of nomenclature is always a difficult one and certainly is it so in regard to chemico-physiological substances, and this committee may be congratulated, we think, on its scheme which seems to us to present a very convenient classification and to provide terms about the meaning of which there should be no misunderstanding.

## NATIVE HOSPITAL ASSISTANTS IN INDIA.

WE have received an appeal issued "to the members of the Indian Medical Service on behalf of Hospital Assistants" and signed by the editor of the journal *Hospital Assistant*, which is an organ devoted to the interests of the class in question. The appeal states that hospital assistants now have to spend at least four years in a medical school and have to undergo a course of both practical and theoretical training. They are, when they have finished their course of training, often placed in entire charge of dispensaries, and the highest salary which they can earn is Rs. 70 per mensem. From information which we have obtained from officers of the Indian Medical Service we know that in many instances hospital assistants are doing good work and are, as stated, in entire charge of branch dispensaries. The appeal in question simply states that the hospital assistants desire a rise in pay and prospects. We think that this might be considered. Although many hospital assistants come from a class of men to whom Rs.70 per mensem means a great deal, yet it must be remembered that the depreciation in the rupee which has taken place of late years coincides with an increase in the cost of living. The appeal does not state what increase of pay is wished for.

## THE OLD BAILEY ACCIDENT OF 1807.

HAD the State opening of the new Old Bailey been fixed only a day or two earlier than Feb. 27th persons learned in the history of London might have had cause to shake their heads on a painful centenary occasion, for on Feb. 23rd, 1807, occurred a "dreadful catastrophe" at the very gates of Newgate which greatly shocked our forbears of the early nineteenth century. The day was the occasion of the execution of Haggerty and Holloway, who had murdered a Mr. Steel on Hounslow Heath, and the people of Hounslow, Bagshot, in Surrey, and that part of Middlesex crowded up in carts and chaises to witness the hanging. So enormous was the concourse of people outside Newgate that, to quote the *British Press* newspaper of that date, "Not only the space in front of the Old Bailey, but all the windows and tops of the houses adjoining, were crowded with spectators, and the avenues, to the remotest point commanding a glimpse of the scene, were choked up with carts and waggons filled with spectators." Our morbid ancestors were thrilled when John Holloway "took off his hat, although his arms were closely pinioned down at the elbows, and made an obeisance to the populace: his face was at that time turned towards Ludgate-hill and he exclaimed with a loud and terrific voice—'Gentlemen all! I am innocent! No verdict. We are innocent, so help me God!' He then turned round to the mob stationed towards Smithfield and repeated the same expressions. He was proceeding to say something more when the executioner stopped him by putting the cap over his face. Precisely at ten minutes past eight they were launched into eternity and Haggerty only appeared to suffer much pain." A young woman was executed at the same time: "she was dressed in white; was of an interesting appearance, and about 26 years of age." To add horror to this, a stampede now took place among the crowd, owing, it is supposed, to the oversetting of a pieman's basket, over which some people stumbled. The stampede resulted in the trampling to death of 27 individuals, "chiefly apprentices, and of great respectability." These, together with 15 of the injured, were carried within the gates of St. Bartholomew's Hospital, which were shut to keep out the crowd. "A great number of the pupils in attendance happened to be collected there at the time and afforded prompt assistance; and Dr. Powell and a surgeon, who were both upon the spot, directed their humane exertions. After all efforts for the recovery of the 27 dead bodies had proved fruitless they were removed to an empty ward, and there the blackened and disfigured dead 'were arranged' with every regard to decency."

## THE RUSSIAN HOSPITAL IN CONSTANTINOPLE.

A CORRESPONDENT in Constantinople sends us an interesting account of the Russian Hospital in the Turkish capital, which in all the efficiency of its working order and equipment is entirely the work of its chief, Dr. Vladimir Stchépotiew. "The hospital stands," he writes, "in a very salubrious suburb at a considerable distance from the European quarter, Pera, and is at an elevation of 300 feet above sea level, immediately adjoining the district Nishan-Tash, well known to the diplomatic world as being the seat of the Sadrazan (Grand Vizir) and many other high State officials. From the windows of its upper storey a magnificent view of the Bosphorus, the Sea of Marmora, the Princess Islands, and the famous cypress cemetery of Scutari may be obtained. The movement for the creation of a hospital for the Slav population of Constantinople was initiated by the then Russian Ambassador, Count Ignatiew, in 1873. He felt that a Russian hospital on the banks of the Bosphorus would prove to be a great boon to the many Slavs, such as Russians, Bulgarians, Albanians, and Servians, who are either settled in Constantinople or else continually come and go. In 1873 the Emperor Alexander II. ordered a grant of 130,000 francs to be made to the hospital. Rules drawn up in the same year declared that the hospital was to be accessible to representatives of every nationality without any distinction of religion, preference, however, being given to Slavs. In 1875 the late Grand Duchess Alexandra Petrowna took the Russian Hospital under her patronage, provided it with necessaries—such as linen, cutlery, and crockery—and also ordered that a number of sisters of charity (*sestry miloserdia*) should remain constantly in its service. Soon afterwards the Russian Government ordered that a tax should be levied for the benefit of the hospital from every commercial steamer and sailing vessel carrying a Russian flag and passing through the Bosphorus, as well as from all passports held by Russian subjects not actually in indigent circumstances. In 1889 the hospital committee decided to create the post of a chief medical officer who would act independently as the superintendent of the institution. In 1890 the present chief, Dr. Vladimir Stchépotiew, was appointed to this post. He was a distinguished pupil of Professor Ostroumoff of the University of Moscow and during his tenure of his present office has earned the esteem and respect of all who know him, as well as the gratitude of the many hundreds of patients who have been treated under his superintendence. He is aided in his work by Dr. L. I. Ignatovitch and there is an efficient staff of nurses. In the extensive grounds of the hospital there are two well-kept gardens, a chapel, a verandah for patients with chest troubles, a separate infirmary for venereal diseases, the residences of the chief and his assistant, and a Turkish bath. The hospital proper consists of three storeys.

Its rooms are large, well lighted, well ventilated, and heated in winter by stoves resembling those seen in Holland." It will be seen that the charitable work done by the institution is well appreciated by the number of the patients relieved. It appears that the average annual number of in-patients is about 400, while the last annual report shows that there were 12,964 out-patients who were mostly Turks, Greeks, and Armenians. The majority of patients treated in the wards are Russians, Bulgarians, Servians, and other Slavs. Almost all receive treatment free of charge. In connexion with the hospital there exists also a charitable fund for the purpose of aiding poor patients who on being discharged recovered are in consequence of their illness left without any means of livelihood.

## RE-INTEGRATION OF THE MIDDLE THIRD OF THE TIBIA IN A CHILD.

IN the *Australasian Medical Gazette* for November, 1906, Dr. Thomas Fiaschi has reported the following remarkable operation. A girl, aged five years, was admitted into hospital on Nov. 20th, 1905, with her right leg flail-like and useless. Four years previously a rusty nail was driven into the leg a little below the knee. Abscesses followed and diseased bone was removed. After this the leg was unable to bear the weight of the body. The patient was well nourished. The right leg presented a longitudinal scar, apparently the result of an operation. The fibula felt normal but the middle third of the tibia was absent and its place was occupied by a band of cicatricial tissues devoid of any ossification. Dr. Fiaschi decided to form the lost portion by two flaps of skin, periosteum, and bone taken from the upper and lower thirds of the tibia at different operations. On Dec. 4th, under chloroform and with Esmarch's bandage applied, a longitudinal incision was made in the anterior aspect of the leg in the middle third. This was deepened and expanded by blunt dissection so as to form a deep cavity for receiving the new bone graft. The ends of both fragments of the tibia were freshened by slightly chiselling them. The longitudinal incision was continued upwards along the middle of the internal or subcutaneous surface of the upper third of the tibia for two and a half inches. Then the incision was curved outwards and brought downwards parallel to the ascending limb and distant from it three-quarters of an inch, but stopping short half an inch from the fresh bone surface so as to allow room for a pedicle. The incision was carried through skin and periosteum down to the bone. With a chisel the bone was cut into to a depth of three-eighths of an inch. Following the line of incision by cutting and prising up a layer of bone three-eighths of an inch thick was detached. This was attached to skin and periosteum and had a narrow pedicle half an inch thick. This osteo-periosteo-cutaneous flap was carefully turned down by making it describe a semicircle inwards and downwards. Its upper end was brought into close contact with the freshened bone in the lower third of the tibia. The bony part of the flap was pressed in so as to fit in the cavity made to receive it. The skin edges were sutured with catgut. The gap left in the upper third of the tibia was covered by sliding over it a skin flap taken from the outer surface of the leg. Double cyanide gauze dressing was used and the leg was immobilised by a back and side splints and starch bandages. Healing was complete by Feb. 28th, 1906, when a plaster-of-Paris bandage was applied. The x rays then showed that the transplanted bone had considerably grown and had become attached to the upper third of the tibia, but no very good union with the lower third appeared to have occurred. On April 30th the second operation was performed, a flap being turned upwards in a similar manner. The limb was put on a back splint and was not touched until May 18th, when cicatrisation was found to be proceeding favourably. Complete healing did not take place until June. Then a solid column of bone was found to have been formed. A succession of skiagraphs showed that the grafts were gradually increasing in size. In August the child was allowed to stand on the leg, any possible bowing being prevented by a leather case with lateral steel supports. At the time of the report she could stand and walk but Dr. Fiaschi insists on her wearing the case for the next 12 months. An alternative operation was one performed by Huntingdon of San Francisco[1]—transplantation of the middle third of the fibula to the tibia. Against this operation were the following considerations: 1. It would risk the future of the leg too much, for if the transplanted bone necrosed the patient would be without any support in the middle of the leg. 2. Bowing occurred in Huntingdon's case. The presence of an intact fibula is some safeguard against this.

## THE METROPOLITAN STREET AMBULANCE ASSOCIATION.

THE work of the Metropolitan Street Ambulance Association has now been in progress for about three years, during which time energetic efforts have been made to direct public attention to the need of a satisfactory system of rendering aid to persons who have met with accidents or have been taken ill in the streets. A few days before the election of the new London County Council took place on March 2nd Dr. Arthur James, the secretary of the association, wrote to every candidate, summarising the facts of the case and pointing out the disadvantages of the present haphazard methods. Candidates approving of the objects of the association were at the same time invited to sign and to return to its offices at 69, Gloucester-terrace, Hyde Park, W., a postcard in the following terms:—

> If elected a member of the London County Council I hope to interest myself in the provision of an efficient street ambulance service, for dealing with the rapidly increasing number of cases of severe accident and sudden illness occurring in the street and other public places of London, and in the event of the Government committee now sitting recommending the coöperation of the London County Council in an adequate scheme, I am prepared to support it.

Dr. James now informs us that 65 of the 118 elected members have expressed their full approval of the terms of the postcard, so that there will be on the Council a small majority in favour of an adequate ambulance scheme without counting the large number of other members well known to hold similar views, though not so definitely formulated.

## INJECTIONS OF FRESH SERUM IN HÆMORRHAGIC CONDITIONS.

AT a meeting of the Société Médicale des Hôpitaux of Paris on Jan. 11th M. P. Emile-Weil read an important paper on the Treatment of Hæmorrhagic Conditions with Fresh Blood Serums. Physiologists have shown the favourable action of calcium salts on the coagulation of blood and Sir A. E. Wright has pointed out their value in the treatment of hæmorrhagic conditions. Physiologists have also shown *in vitro* that incoagulable blood recovers its coagulability on the addition of fresh serums, but, curiously, the hæmostatic value of such serums in man has never been tested. M. Emile-Weil has found that *in vitro* the addition of fresh serum completely corrects the various defects of coagulation of the blood of hæmophiliacs. The same effect is produced *in vivo* by injections of serum and the patient whose blood has become normal comports himself as a normal person. In one case a tooth was extracted 25 days after the injection of serum without notable hæmorrhage and in another case the operation for empyema and incision of a perinephritic abscess were performed without any remarkable hæmorrhage two days after the injection of 20 cubic centimetres of fresh horse serum. In a third case a patient who had hæmarthroses every month ceased to suffer for 11 weeks. In a

[1] Annals of Surgery, February, 1905.

fourth case hæmaturia which had lasted for a month diminished and ceased in three days. In purpura, whether primary or secondary, acute or chronic, excellent results were also obtained. A woman, aged 51 years, addicted to alcohol, was admitted into hospital on Sept. 19th, 1905, with febrile polyarthritis. Her gums were fungating and bleeding and there was epistaxis. On the 23rd subconjunctival hæmorrhages, large purpuric spots on the limbs, and intense hæmaturia appeared. An intravenous injection of 15 cubic centimetres of ox serum was followed by remarkable improvement. On the following day the temperature fell from 102·2° F. to 99·5°; the urine was almost clear; the gums were no longer fungating or bleeding; and the arthritis had disappeared. In another case a man had been suffering for three days from intense hæmaturia, the urine consisting of almost pure blood. There were also purpura, in the form of large ecchymoses, melæna, and fungating and bleeding gums. The temperature was 102°. This state was a sequel of typhoid fever, complicated by double pneumonia. The urine contained innumerable pneumococci. The blood showed delayed coagulation and want of retraction of the clot. 30 cubic centimetres of antidiphtheritic serum two days old were injected under the skin. On the following day the gums no longer bled and were not fungating, and the renal hæmorrhage had much diminished. On the next day there was not a trace of albumin or blood in the urine and the temperature was 99·3°. The following is an example of the results obtained in chronic purpura. A man, aged 42 years, addicted to alcohol, had a large liver, articular pains, and purpura of the legs and arms. During three months ten eruptions of purpura occurred and the articular pains alternated with abdominal crises. The urine constantly contained blood and there was prolonged hæmorrhage whenever the patient cut himself in shaving. 15 cubic centimetres of ox serum were injected on July 22nd and the hæmaturia, purpura, and pains disappeared. M. Emile Weil concluded that fresh serum is an effective remedy for the arrest of hæmorrhages in all dyscrasic states—more effective than any other, including calcium salts. He recommended the following technique. For dyscrasic hæmorrhages in adults 15 cubic centimetres of fresh serum should be injected into the veins, or 30 cubic centimetres under the skin. A second injection may be given without ill effects two days later. In children half doses may be given. The serums of man, the rabbit, the horse, or the ox are equally efficacious, but *in vitro* human serum has a more marked effect on defective coagulation. The serum should not be more than a fortnight old. Ox serum, though very active, should not be used. It was the only serum which produced ill effects. These occurred immediately after injection and were always fugitive but sometimes marked. They consisted of considerable rise of temperature, rigors, cyanosis, vomiting, headache, and backache. In hospitals human serum is generally available; in private practice rabbit serum may be obtained easily by antiseptic bleeding from the carotid artery. Antidiphtheritic serum may be used but simple serum is preferable.

## THE BOROUGH OF ST. MARYLEBONE HEALTH SOCIETY.

THE Borough of St. Marylebone Health Society was constituted on Feb. 22nd, 1906, the members being connected with charitable, municipal, or religious organisations working in the borough. The chairman and the honorary secretary are medical men, the former being Mr. Alexander Winter Blyth, the medical officer of health, and the latter being Mr. Bernard F. Hartzhorne, 39, Loudoun-road, St. John's Wood, N.W. Following the example of a similar association established in the city of Westminster, several philanthropic lines of action were adopted as the definite objects of the society, the first three being as follows: (1) to work in coöperation with the public health authorities, the Poor-law medical officers, and the charitable and social agencies of the borough; (2) to utilise the services of local medical institutions and of trained local workers and others in giving general practical instruction and advice in matters of health and sanitation to the people in their homes; and (3) to arrange for the training of such local workers and for popular lectures on health and sanitation. The first annual meeting of the society was held at the town hall, Marylebone-lane, on Feb. 25th, under the presidency of Sir Samuel Scott, Bart. The report, which was then presented, dealt with the society's operations for a period of nine months ending Dec. 31st, 1906. During this period two series of lectures were given at the St. Marylebone General Dispensary with a view to the instruction of members of the local visiting staff. An effort was also made to instruct mothers by means of "lectures or informal talks." Among the most important aids to the work of the society have been the "infant consultations" at the St. Marylebone General Dispensary, by means of which healthy infants may be kept under medical supervision during the first two years of life. The report further showed that the society had given a great deal of attention to the prevention of tuberculosis.

## THE BACTERICIDAL POWER OF VARIOUS SILVER PREPARATIONS.

AN experimental study of the bactericidal power of various silver preparations has recently been published in the transactions of the American Ophthalmological Society. The investigation was made in the pathological laboratory of the Massachusetts Charitable Eye and Ear Infirmary by Dr. George S. Derby of Boston, Massachusetts. The method adopted was to place two cubic centimetres of the solution to be tested in a small sterilised glass dish and a loopful of a 24-hour culture of the staphylococcus pyogenes aureus was stirred in thoroughly. From this loopfuls were taken at stated intervals and stirred into the water of condensation of blood serum slants. The water of condensation was then run over the surface of the blood serum and the tube was placed in the incubator for 24 hours, at the end of which time it was examined, and if no growth had taken place the water of condensation was again run over and the tube was replaced in the incubator for a second 24 hours. Remarkably constant results were obtained in the 600 to 700 cultures taken in this way. The preparations tested were silver nitrate, argyrol, protargol, collargol, largin, ichthargan, albargin, argonin, and argentamin. Solutions of silver nitrate containing from ½ to 2 per cent. of the salt killed the staphylococcus pyogenes aureus in from two to five minutes. Protargol in 2 to 4 per cent. solutions usually killed the same bacterium in from three to five minutes, though occasionally a few colonies would grow after ten minutes' exposure. Collargol possesses a relatively weak bactericidal power, as a growth of the bacterium could be obtained at the end of 20 minutes with the 4 per cent. solution. Albargin in 1 per cent. aqueous solution is very irritating. 10 per cent. solutions killed the bacterium in from two to five minutes. Ichthargan is also very irritating. Solutions of from $\frac{1}{10}$th to 1 per cent. arrested growth after from one to four minutes. Argentamin in 5 per cent. solutions acted like ichthargan. Largin is rather irritating, but a 10 per cent. solution kills the staphylococcus pyogenes aureus in from two to five minutes. Argonin in a 5 per cent. solution is less irritating than any of the four last-mentioned preparations. No growth of the bacterium could be discovered after exposure to its influence for from three to six minutes. The bactericidal power of argyrol is extremely weak. Dr. Derby

calls attention to the destructive action on the bactericidal properties of sodium aurate or protargol shown by Dr. Verhoeff to be possessed by normal blood serum.

## NUMBER OF HOURS OF BRIGHT SUNSHINE RECORDED IN 1906.

WE give below, in continuation of the list published in THE LANCET of Jan. 26th, a table of bright sunshine records for last year. These records are, we know, of interest to medical officers of health, the question of sunshine being rightly taken into account as a factor in the health bill of many localities. The stations have been selected for record on different grounds, the results being computed from figures published by the Meteorological Office.

*Number of Hours of Bright Sunshine recorded in 1906 by Campbell-Stokes Instruments, with the Difference from the Average.*

| Station. | Hours. | Difference from average. | Station. | Hours. | Difference from average. |
|---|---|---|---|---|---|
| Newcastle-on-Tyne | 1076 | + 11 | Plymouth ... ... | 1848 | +198 |
| Saltburn-by-the-Sea | 1566 | — | Guernsey ... ... ... | 2010 | +104 |
| Morpeth (Cockle Park) ... ... ... | 1550 | — | Newquay ... ... ... | 1879 | +192 |
| Durham ... ... ... | 1464 | +147 | Scilly Isles ... ... | 1852 | + 41 |
| York ... ... ... ... | 1384 | +108 | Cullompton ... ... | 1690 | +202 |
| Skegness ... ... ... | 1866 | — | Tenby ... ... ... | 1773 | + 87 |
| Cambridge ... ... | 1756 | +197 | Aberystwyth ... ... | 1514 | — |
| Dunmow ... ... ... | 1789 | — | Aberdovey ... ... | 1536 | — |
| Hillington ... ... | 1665 | +166 | Llandudno ... ... | 1683 | +227 |
| Cromer ... ... ... | 1778 | — | Hoylake ... ... ... | 1682 | — |
| Geldeston ... ... | 1843 | +223 | Southport ... ... ... | 1625 | + 67 |
| Felixstowe ... ... | 2065 | — | Newton Rigg (Penrith) ... ... ... | 1479 | + 93 |
| Rothamsted ... ... | 1833 | +300 | Stonyhurst ... ... | 1392 | + 36 |
| Southend-on-Sea ... | 1925 | — | Prestwich ... ... ... | 1316 | +182 |
| London (Bunhill-row) ... ... ... | 1409 | +270 | Harrogate ... ... ... | 1497 | — |
| Broadstairs ... ... | 2004 | — | Worksop ... ... ... | 1383 | +130 |
| Ramsgate ... ... ... | 2028 | — | Garforth ... ... ... | 1394 | — |
| St. Leonards ... ... | 1994 | +211 | Sheffield ... ... ... | 1438 | — |
| Eastbourne ... ... | 2050 | +312 | Oxford ... ... ... | 1710 | +212 |
| Worthing ... ... ... | 2011 | — | Edinburgh ... ... | 1280 | +124 |
| Bognor ... ... ... | 2023 | — | Strathpeffer ... ... | 1247 | + 58 |
| Ventnor ... ... ... | 1915 | +192 | Armagh ... ... ... | 1382 | + 92 |
| Southampton ... ... | 1898 | +233 | Birr Castle ... ... | 1400 | + 50 |
| Kew ... ... ... ... | 1723 | +255 | Kingstown ... ... | 1688 | — |
| Falmouth ... ... | 1953 | +166 | Ballinacurra ... ... | 1572 | — |
| | | | Douglas (I.M.) ... | 1696 | + 95 |

## THE CHEAP REVOLVER.

THE murder of Mr. Whiteley and the arrest of a burglar armed with a revolver, who had apparently aimed it at a policeman and pulled the trigger twice without succeeding in firing it owing to a defective action, are only two instances of recent crimes in which pistols have played a prominent part. The Act of Parliament which requires anyone purchasing a pistol from a gunsmith to take out a licence and to comply with certain prescribed formalities, and which submits to inspection the gunsmith's sale of these articles, seems hardly adequate to protect the public or to prevent dangerous persons from carrying these weapons to assist them in their crimes. It may not be easy to devise legislation with this object in view but it is hardly possible that any can disagree when we suggest that any civilian who carries a pistol with him when going about his daily occupation is *primâ facie* engaged upon business which ought to be inquired into. An Englishman's house is traditionally a castle, for the defence of which he may equip himself with firearms, but to have them with him in the highways and to carry them into the houses of his fellow citizens is quite a different matter. His action may not be easy to detect but if the carrying of a pistol, with or without a gun licence, were a crime punishable with imprisonment or with a heavy fine, as well as the forfeiture of the weapon, in cases where a good excuse was not forthcoming, and if everyone purchasing a pistol were to be obliged to have not only a licence but the certificate of a magistrate as to his need for it, revolvers would soon occupy their true position in the public esteem. At present, if anybody becomes aware that another person carries such a weapon it may interest or alarm him or not but he cannot interfere. If the police upon being informed of such a practice could take action immediately against the person believed to be guilty of it the information would probably be given in many cases, and if but a few lives were saved in the course of a year at any rate no honest and peaceful citizen would be the worse for what others might regard as inquisitorial interference with their rights.

## ROYAL MEDICAL AND CHIRURGICAL SOCIETY OF LONDON.

THE annual general meeting of the Royal Medical and Chirurgical Society was held on March 1st, Mr. J. Warrington Haward, the President, being in the chair. The report of the council together with the honorary treasurer's audited accounts were read and adopted. The President delivered the annual address. After the usual vote of thanks to the President for his address and to the retiring officers the following officers were declared elected:—President: Mr. Warrington Haward. Vice-Presidents: Sir Lauder Brunton, Dr. T. Henry Green, Mr. W. Harrison Cripps, and Mr. Herbert William Page. Honorary treasurers: Sir William Selby Church, Bart., and Mr. Alfred Pearce Gould. Honorary secretaries: Dr. Howard Henry Tooth and Mr. Stephen Paget. Honorary librarians: Dr. Norman Moore and Mr. Rickman John Godlee. Members of Council: Dr. Theodore Dyke Acland, Dr. Edwin Clifford Beale, Dr. Dudley Wilmot Buxton, Dr. Philip Frank, Dr. George Ogilvie, Mr. John Bland-Sutton, Mr. Andrew Clark, Mr. Walter H. H. Jessop, Mr. Bilton Pollard, and Dr. James J. Macwhirter Dunbar.

## EPIDEMIC CEREBRO-SPINAL FEVER.

FRESH cases of epidemic cerebro-spinal fever continue to be reported from various parts of the kingdom. In London during the last seven days a boy and girl have been removed from their homes in Lambeth to St. Thomas's Hospital and a case has been notified in Pentonville. On Feb. 26th the London County Council ordered that for a period of six calendar months from that date the disease should be a notifiable one under Section 55 of the Public Health (London) Act, 1891. In Leicester there has been a total of three cases, all of which have terminated fatally. Cases are also reported from Riddings in Derbyshire, from Selby in Yorkshire, and from Newcastle-under-Lyme in Staffordshire. In Glasgow on the morning of March 4th 12 cases and five deaths were announced. There were then remaining under treatment in Glasgow 90 patients in the hospital and 19 in their own homes. In Airdrie a girl, four years of age, fell ill on March 2nd and died on the 4th. In Edinburgh there has been a total of 15 cases, all of which have proved fatal, the last death occurring on Feb. 27th. Other localities in Scotland where cases have recently occurred are Motherwell, Bothwell, Dalserf, Bellshill, Paisley, Greenock, Falkirk, Kilmarnock, Kirkintilloch, and Renton. In Belfast eight new cases and two deaths were notified on March 5th, making a

total of 147 cases and 81 deaths. In Dublin there has been another death from the disease, making a total of nine deaths; on March 2nd there were three cases remaining in hospital.

THE Department of Public Health of Queensland in a bulletin dated Jan. 19th states that for the week ending on that date 8 cases of plague or presumed plague had been admitted. Previously to the first of these 8 cases the last case was reported during the first week in January in a bulletin dated Jan. 5th. Case 2, the first of the present series, was admitted to the plague hospital on Jan. 12th with bubonic plague. Case 3, a boy aged 14 years, was admitted to the plague hospital on Jan. 16th and died on Jan. 18th from the bubonic type of plague. Cases 4 to 9 inclusive were all boys under 17 years of age, all coming from one locality and residing in close vicinity to one another. They were all admitted with cerebro-spinal symptoms, vomiting and abdominal pain, and cases 4 to 7 after admission to the hospital developed adenitis. Of these four cases, smear preparations from materials obtained from the glands showed the presence of bacillus pestis. The bulletin also states that several cases of illness suspected to be plague have been reported from Port Douglas which is situated on the coast between Cairns and Cooktown.

THE Commissioners for the 1851 Exhibition have appropriated a site on their estate at South Kensington for the Institute of Medical Sciences. It is understood that the site will be reserved for a period of one year, during which it is hoped that the additional sum of about £30,000 required to build and to equip the institute may be obtained. All interested in the University of London and the development of medical education in the metropolis should assist in the raising of this sum. The address of the honorary treasurers is 35, Clarges-street, London, W.

THE annual clinical debate of the Chelsea Clinical Society on the subject of Gall-stones, the Diagnosis and Indications for Operation, will be held at the Chelsea Dispensary, Manor-street, King's-road, London, S.W., on Tuesdays, March 12th and 19th, at 8.30 P.M. The following will be the speakers: on March 12th, Dr. W. Hale White, Mr. A. W. Mayo Robson, and Dr. Seymour Taylor; and on March 19th, Mr. L. A. Bidwell, Dr. H. D. Rolleston, and Mr. H. J. Waring. These meetings are open to all members of the medical profession.

THE new County Council has among its members several medical men. Dr. R. M. Beaton has been returned for North St. Pancras, Dr. J. Davies for Haggerston, Dr. E. B. Forman for South Kensington, Dr. A. Salter for Bermondsey, and Mr P. Vosper for West St. Pancras. These gentlemen, with the exceptions of Dr. Davies and Mr. Vosper, were members of the late Council. Mr. R. A. Robinson, who, though not a member of our profession, was lately President of the Pharmaceutical Society, has been returned for South Kensington.

THE surgical addresses arranged to be delivered before the Medical Society of London on March 11th by Professor Trendelenburg, and on March 18th by Professor Murphy, will not be given on these dates. Professor Trendelenburg, having to act as temporary dean, is unable to leave Leipsic before March 15th, and Professor Murphy is detained by official duties in Chicago. It is hoped that it will be possible to arrange for these addresses to be delivered later in the society's year.

Prince Alexander of Teck, G.C.V.O., D.S.O., took the chair on Feb. 27th at the executive meeting of the special appeal committee of the Royal Waterloo Hospital and announced that the Duke of Argyll would preside at the festival dinner of the hospital to be held at the Savoy Hotel on May 14th.

Mr. Reginald Harrison, president, and Dr. Arthur James, honorary secretary, of the Metropolitan Street Ambulance Association, have been invited to give evidence before the Government Committee now sitting to inquire into the ambulance needs of London by the chairman of the committee.

A CONVERSAZIONE given by the staff of the Post-Graduate College, West London Hospital, is to be held at the hospital on Wednesday next, March 13th, at 8.30 P.M.

# A NATIONAL SCHOOL FOR CONSUMPTIVES:

## A STUDY OF THE RELATION OF THE SANATORIUM TO THE PROBLEM OF THE WORKING-CLASS CONSUMPTIVE.

BY C. H. GARLAND,

CHAIRMAN TO THE NATIONAL ASSOCIATION FOR THE ESTABLISHMENT AND MAINTENANCE OF SANATORIA FOR WORKERS SUFFERING FROM TUBERCULOSIS;

AND

T. D. LISTER, M.D. LOND.,

CHAIRMAN OF THE SITES AND BUILDINGS SUBCOMMITTEE OF THE ASSOCIATION AND PHYSICIAN TO MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, HAMPSTEAD.

FOR a full solution of the problem presented by the working-class consumptive a combination of medical, charitable, social, and administrative (if necessary, also legislative) efforts is necessary. Medicine has so far pointed the way, philanthropy and social endeavours have done their best to follow, while administrative energy for some reasons has done practically nothing in this country. The consumption incidence on any given group of the population may be taken as an index of the conditions of life and labour therein. When education in matters of hygiene becomes diffused among the labouring masses of the country and their organi-ation approximated more closely to perfection we may look forward to the sanitary "strike." Let us hope that before that doubtful blessing arrives there may be evolved a Government that will include among its members a Minister of Public Health with more than nominal powers. The time is past when public health should be considered a subordinate branch of local government.

Difficulties arise at every stage in the history of the working-class consumptive as we meet with him at present. These have been reiterated *ad nauseam*. The chest hospitals have been criticised even by their own physicians for the fatuity with which the out-patient "treatment" of consumption is persisted in. Most out-patient physicians at chest hospitals of, say, anything like five or ten years' continuous recent experience would be prepared, however, to agree that there is an awakening going on. Many more cases than formerly turn up for treatment in the earlier stages from among the general hospital class population dependent on the spread of popular information for a knowledge of the importance of the early recognition of their disease. Many such patients show themselves so active and intelligent in carrying out the rules of health on which arrest depends that arrest is by no means an uncommon occurrence. These are, no doubt, "picked cases" but they are a strong justification for the continued work of the out-patient department and its value as a health-teaching centre. Its fault lies in the wholesale distribution of drugs to starving "chronics." Yet even to many of these cases the regular visit to the hospital and the regular receipt of its dispensary doles are the sources of renewal of hopes and the little allowances of food and fuel from friends little better able to afford it than the patients themselves. To close the out-patient doors to these would be, at present, a charitable mistake, though medically they are a drag. The medical charities ought not to have to deal with

them and would not if there were only in existence a proper system of Poor-law out-patient relief, combined with compulsory notification and sanitary visitation. For the advanced bedridden case, possibly the chief source of new cases, no provision exists save the infirmary, which is not large enough. Special infirmary accommodation has often been demanded for them, as, for instance, using untenanted small-pox hospitals, but whatever mode may be advocated they are proper material for the exercise of public administrative functions. For the "sanatorium" case among working-class consumptives very scanty accommodation already exists, and such as is in existence in connexion with chest hospitals is largely crippled in its usefulness by the letter system and the "waiting list," though the sanatorium is the essential treatment of any mass of cases.

The dispensary, the hospital, the sanatorium, and the infirmary are the means at work for treating the working-class consumptive. The larger and much more profitable field of prevention is as yet largely untilled. Before the adoption of the administrative and possibly legislative machinery which may be necessary for the complete handling of the problem, dealing with it from its inception in insanitary habits, customs, dwellings, and environment, and employments, much may be done meanwhile by the utilisation of the forces of organised labour. How powerful those forces may be recent history is beginning to show.

As the sanatorium has focussed the treatment of consumption, so the sanatorium may also focus the larger plan of educating the labour population as to the nature and prevention of consumption. The establishment and maintenance of sanatoriums for the working-class consumptive by the organised working-classes themselves will do much to bring home to organised labour how much more has to be done. Parliaments, like Providence, help those who help themselves. This should be a motto for organisers and propagandists (even, we may add, *sotto voce*, for the medical profession itself). The sanatorium is only one, but an essential, link in the chain of effort. Working-class sanatoriums, managed and paid for by their own organisation, must be devised on first principles, and all unnecessary luxuries of site, buildings, equipment, and staff must be eliminated, so far as this can be done with efficiency and permanent economy. The demoralisation of the convalescent home, infirmary, or hospital must be avoided by the graduated employment of the patient. The sanatorium is both hospital and convalescent home, but it is also neither. It is really a training school for the would-be-well and it is likely to be worse than useless to the indifferent or lazy patient. The palatial building and the liege-halle must give place to the simplest home-like institution and organised training for the resumption of wage earning. If possible the patients in whom the disease may be believed to be arrested should be retained in an after-care colony connected with the sanatorium. Here full work and wage earning can be resumed gradually, while yet not entirely out of touch with the medical authorities of the sanatorium, though not directly under medical control. For the success of such a scheme propagandist work among all the friendly, labour, and trade societies affiliated to the movement must be continuously pursued and the coöperation of the medical profession in the selection of suitable cases must be anxiously sought. The members of all the affiliated organisations must be taught the means of recognising early consumption as well as the necessity of seeking treatment before being completely incapacitated. The importance of the educational value of a term of residence in a sanatorium is inversely proportional to the magnificence of the buildings and surroundings. Every patient must leave a working-class sanatorium convinced that there is nothing in the accommodation or in the life which he experienced there which is incapable of being copied in his own simple home. If he be of the fortunate majority in whom the disease becomes arrested, he must realise how much his future will depend upon himself and how much he can do of good to his fellows by inducing them to live the cleanly, sober, busy, regular life of a workers' sanatorium.

Taking this view of the central position of the sanatorium in the anti-tuberculosis armament it appears to us that before the full effect of its operations can be felt among the working classes there must be a considerable remodelling of organisation in the sanatorium itself, and in some of the subsequent stages of treatment. The chief evil which results from a three months' or longer residence in a sanatorium or home is the acquirement of the "loafing" habit. Most of the workers who are treated are men and women who by force of economic necessity have acquired the habit of regular and sustained work. Such regular sustained effort is not a natural instinct, but rather a habit acquired, slowly and painfully, maybe, under the conditions of civilised life. If one can base any conclusion on the habits of the lower human races, the "loafing" habit would seem to be the more natural. It is certainly the fact that it is exceedingly easy to break the work habit and fall back into the other. This is, of course, most noticeable among workers whose employment makes few demands on their intellect. The effect on unskilled and lowly skilled workers of being out of work is known to be exceedingly demoralising. The "out-of-work" soon becomes the "work-shy." "Unemployable" is to the social clinician only an advanced stage of "unemployed." The demoralisation of being out of work is perhaps more serious in many cases than the deprivation, for the former is likely to become permanent where the latter may be merely temporary. Unfortunately, residence in a sanatorium is likely to have the same result when we are dealing with the same class, though its tendency is demoralising in any class. The patient leaves the sanatorium "soft," with an exaggerated view of his own delicacy of constitution, and a belief that health and doing nothing are synonymous terms. This condition of mind and body is unfortunately fostered by the solicitude of friends and the frequent injunctions of advisers, medical and other. Nor is it difficult to follow some of the train of reasoning that brings the lowly educated worker to this position. He knows that his work and the environment in which he lives—which is the direct outcome of his work and its reward—have generally been the cause of his disease. He knows that could he have the life and comforts of the well-to-do classes he would be less liable to contract tuberculosis. There is abundance of evidence to support this view; given these main facts, then, and no capacity to make fine distinctions and qualifications, is it surprising that he arrives at the broad generalisation that "work is the enemy"? It is useless to assume for the class of workers in question any love of work for work's sake. The modern subdivision of manufacturing processes has made the work of the individual for the most part mere uninteresting routine. He has not the pride of the artisan in the finished product, for in many cases he never sees it. For the unskilled wage-earner work has no inherent nobility of dignity. It is a task and the employer is the taskmaster, and the view that work is not good for him is grasped as readily as the school-boy grasps the means of escape from his lessons.

We have dealt at some length on the above points because we believe it is essential for any scheme of employment in the sanatorium that we should get at the point of view of the worker whom we are treating. Sufficient allowance has not been made for it in the past. There is a general admission that work for the patients is useful and necessary not only as a means of avoiding the demoralising effects of idleness but also as a part of the "cure." With this end in view there have been many endeavours to construct graduated schemes of work for the sanatorium cases with more or less success. But these schemes should be based on some attempt to reach the reason of the patient and to convince him that for his recovery this graduated series of tasks is as necessary a part of treatment as any other and more obvious part. There is a rich fund of common sense and simple logic among the working classes if you can only reach it. An organised endeavour should be made to reach it and thus get nearer to the solution of the problem of work for sanatorium patients. There will be prejudices to overcome and dislikes to mollify, and the pupils will not be of the most receptive age, but if an effort is made to reach the worker's point of view and to approach him from what may be called his own side we are convinced from experience among workers' organisations that it will be largely successful.

Nobody can fail to be struck by the excellent results that are attending such efforts at Frimley, where there seems to be no limit to the good work that patients can be induced to perform if they are properly managed. The cost of maintaining the sanatorium can be largely reduced by such methods and the wages bill reduced to quite simple proportions.[1] A colony attached to a sanatorium could hardly be made to pay in a commercial sense, although it might perhaps be made self-maintaining, but there is no longer

[1] Dr. Woodcock of Leeds, Paris Congress, vol. ii., p. 612.

room for doubt that the patients and the institution can be benefited largely by a scheme of work that approached the patient in the first place on his rational side. In attempting to reach the patient there are means which seem to present themselves at once. Firstly, we would suggest to all speakers and writers who are now engaged in preaching the gospel of fresh air to give the scheme of graduated employment a prominent place in their advocacy. Let them differentiate clearly between a sanatorium and a "home of rest." Let it always be represented rather as a school of hygienic living at which the patient will be taught not only how to live healthily but also how to perform his work healthily. This is now done but in few cases. It is probably in the mind of many of the advocates, but it is not insisted on and emphasised sufficiently. It must be brought to the forefront and consciously given greater prominence. Nobody is more curious about the methods and objects of his treatment than the patient himself. Apart from morbidity he has a real desire to learn something of his new condition of health and his new mode of living. This keen curiosity, if taken in the right way, will help us materially in his treatment. Every new-comer at a sanatorium is, or should be, presented with a copy of the regulations for patients. Why not let these be given to him in the form of a small book or pamphlet in which is set out in plain, non-technical language some account of the treatment and the reasons for the regulations? Let us take an example. The patient is met with a regulation such as this: "Patients must obey the doctor, the inspector, majordomo or matron; they must follow exactly their instructions, and especially must not employ other means than those prescribed by the doctor for their cure." (*Hausördnung für die Lungenheilstätten der Landes-Anstalt, Braunschweig.*) Would it not be infinitely more useful if this regulation were accompanied by a brief exposition of the reasons for its existence? Let the patient be told that the doctor must know all about the physical conditions of the person under his charge and any influence that is bearing upon him. To insure this he must be able to order his comings in and his goings out and be aware of the nature and quantity of all drugs and food which are being introduced into his system. Make it clear to the sufferer that the doctor is for the time being in charge of his physical machinery and, like an engineer, must know all about the fuel and oil given to his engine, the nature of the road it is to travel, and any other condition which may affect its efficient working. The same method could be applied to all the other regulations which are in force, and thus in the very study of the regulations some simple facts and arguments on the disease and its treatment could be inculcated.

Then there is the recreation room. Could not the resident medical officer, or even the matron, take the patients a little into their confidence and in recreation time have an occasional *causerie* on the work of a sanatorium? The *causerie* should be carefully guarded from becoming a lecture or a scientific disquisition and should be just a common-sense chat. It must not dwell on the dark side of the disease or be made the food for nightmares for the sufferers, but be merely a pleasant, homely talk in which the methods of treatment and the value of the graduated duties asked of the patients could be set out. Although not absolutely essential, it is difficult to escape the conviction that a greater measure of success would attend a system that allowed some choice in the nature of the duties allotted. Undoubtedly, patients with proper management can be induced to do almost any kind of work, and there is a great deal to be said for the system which makes each inmate responsible for his own cutlery and crockery. But after conversing with many patients who have been in institutions where such a method was adopted, the impression is left that there are weighty reasons against it. It is generally humiliating to a man to perform those domestic duties which long custom has made him regard as "women's work." Even the most tractable of them do not like bed-making, floor scrubbing, washing-up, and similar duties. The prejudice is deep-rooted and not easily overcome. Women, however, will perform the same duties without any sense of humiliation, whilst they shrink instinctively from certain forms of manual labour which are welcome to a man. The difficulty of letting the patients work for one another and thus get mixed in the institution is a very great one, and many patients are willing to do things for themselves which they object to do for others. But some consideration should be given to these very natural prejudices and the tasks arranged accordingly. "Women's work" for male patients should be done by female servants of the institution, while such work may well form a part of the employment of female patients.

We have merely endeavoured to hint above at some of the considerations that a wide experience of workers and their organisations has impressed upon us as conditions for obtaining their coöperation. But there is a much more difficult subject to be considered when we turn to the question "What shall we do with the patient after his discharge?" Let us assume at the outset that by the best management our patient has been turned out "hard" and able to do a fair day's work under healthy conditions. It may well be asked, Is not all our care and trouble thrown away if we let him go back to the stuffy office, the dusty factory, the overheated and unventilated workshop, the mean house and mean street where he contracted the disease? One of us has pointed out elsewhere[2] that prophylaxis is of infinitely more importance in the struggle against tuberculosis than therapeutics, and that one of the main lessons of the Paris Congress was that "the whole structure of modern industrial society would have to be altered before the battle could be carried on effectively among the working classes." But until this social revolution has taken place we have not, in the majority of instances, even a decent environment to which we may return our post-sanatorium cases. If an attack of pulmonary tuberculosis is indicative of anything it certainly means that the patient is not fit for town life and work under prevalent conditions, and a wise man would show his wisdom by accepting the warning. Yet the bulk of our patients are derived from our town population and are trained in work which is carried on mostly in towns, and they would be unable to earn an equal wage elsewhere and unwilling to lower their standard of living. With a family dependent on him a man may feel that he is not able in any case to accept a reduced pay. It has been pointed out with considerable force that reduced pay also means reduced food and comforts, which may more than counterbalance the benefit of a new occupation.[3] Yet any advice to change his occupation and adopt some country occupation must mean a reduction probably from 50*s.* or thereabouts to 20*s.* or 25*s.* How many working men would accept our advice, even if they saw the reason of it, when it involves a fall from the position of skilled artisan to unskilled labourer or market gardener?

If we look at the problem from another point of view, where are we to find openings for all our post-sanatorium cases in open-air occupations? It is impossible to say exactly what is the number of persons of the working classes who are discharged "cured" from sanatoriums annually, but enough is known to indicate that they may eventually have to be reckoned in thousands with the increase of sanatorium accommodation for the workers that is going on. It is pretty obvious therefore that spasmodic charitable efforts and the small relief afforded by the employment of a few men at the sanatoriums themselves are only palliatives that will leave the mass practically untouched. So that even if we were able to persuade all our patients to forsake town life and look for country or open-air employment we should be in a fix when we sought to give practical effect to our advice.

In approaching this question of after-care we should then disabuse our minds of the idea that we are going to wean the majority of our post-sanatorium cases from their old town employment and face the undoubted fact that most of them will return to their former occupation and environment. A very interesting suggestion was made by Miss Hilda Joseph in *Tuberculosis* (Vol. IV., No. 2) for the establishment of a working colony where workers with arrested tuberculosis could be employed under the best hygienic conditions and, in time, could be self-maintaining. Such a scheme was shown to be practicable although difficult. If the experiment is tried it should be closely watched, as it may show us the way to the solution of, at least, a part of the problem. The difficulties that appear to stand in the way are great, and not the least of them will arise from the workers themselves. The segregation of invalids from any complaint is not likely to prove popular among the invalids themselves and the aggregation of them offers some objectionable aspects. Then there would be the difficulty of avoiding underselling the products of healthy labour, and also the payment of dole wages rather than the standard rate of wage for the particular industry, either of which would evoke the opposition of the organised workers and make the movement unpopular. These and other pitfalls must be carefully avoided

[2] Tuberculosis, vol. iii., p. 309.
[3] Paterson and Shrubsall, THE LANCET, July 28th, 1906, p. 217.

if the scheme is to make any sort of success. Personally, we do not think that the permanent employment of "cured" consumptives in a colony is either necessary or desirable. We must then, for the present, face this fact: that the majority of our discharged patients will go back to their old homes and trades. The question thus becomes a question of how shall we best fit them for the return to such wage earning?

This question has received attention already in Germany and will receive attention in England so soon as the scheme of the National Association for the Establishment and Maintenance of Sanatoria for Workers suffering from Tuberculosis gets into full swing. It will be interesting to examine briefly what has been done in Germany. In order to fill up the lack of some sort of transition home between the sanatorium and the return to work certain farm colonies were established for the purpose of enabling tuberculous patients to take up their trade again by a scheme of graduated occupation and training in the avoidance of all dangerous work. The work was graduated according to the state of health of the patient and all exacting work was done by a healthy staff attached to the institution. The convalescents only did light work until their health permitted of heavier tasks. The tasks generally allotted to the patients were path- and road-making in the neighbouring forests, the planting of vegetables, and the tending of flowers The results obtained so far as the health of the patient was concerned were excellent but the attempt has not yet been a success for reasons which should help us greatly in our considerations in England. Dr. Liebrecht thus sums up the causes of failure: "The reason for stopping the experiment was the smallness of the number of invalids. ..... By what can we explain the fact that out of 650 persons discharged from sanatoria in 1904 only about 65, or 10 per cent., went to the farm colony? Because (*a*) the discharged patients who are married believe, when they are thought capable of working, that they must in the interests of their families go back to their trade; (*b*) those unmarried fear to change the pleasant life of the town for the isolated existence of an agricultural worker; (*c*) most of the patients will not understand that the food at the farm colony must be different to that at a sanatorium; and (*d*) compulsory work is not liked."[4]

The German experiment proves, then, that the adoption of farm work is the best thing for the discharged worker, but that obstacles in the patients themselves, which I have foreshadowed as the possible pitfalls of an English experiment, have been sufficient to make a failure of the experiment. Must we, therefore, abandon the idea of a farm colony or after-care colony as a transition stage between the sanatorium and full work? We think not. There is no doubt as to the beneficial influence on the patient if he can be induced to stay at the colony. This is, then, the difficulty to be overcome. With the careful mental training advocated above there will be greater willingness among the patients to take advantage of the after-care colony, and if the work both in the sanatorium and in the colony is carefully chosen so that so far as possible the patient is occupied at his own or some allied trade there will be less desire for an early escape. The suggestion we should make, therefore, is this: Let the patient be set to a graduated series of tasks in the sanatorium and then passed on to the colony to continue his work when he has so far improved as to undertake full-time employment. Let the mental acquiescence in such tasks be cultivated throughout each stage. Make the life of the patient as free and cheerful as is consistent with healthy living, and although the attractions and habits of town life cannot, perhaps, be reproduced—although there will still be a desire to "hear the 'buses in the Edgware-road" (*vide* Dr. Jane H. Walker)—at least some of the monotony of country life might be overcome by games and social intercourse. The garden-city scheme on a model scale may help. Mental conviction and acquiescence in the method of treatment seems to be the main object to be attained in order to insure success, therefore the effort of all concerned should be persistently directed towards attaining it. By these means we might induce our patients to remain under our observation for a longer period than at present and with careful management they might be made quite self-supporting during the latter stages. But having got our cases discharged in a condition that is on the average better than that in which they are now discharged, having turned them out "hard" and without the "loafing" habit strong on them, what is the best advice to give them when they do leave us? We must above all remember that working-class patients are limited in their ability to take advice. It is useless advising them to take sea voyages, to reside at the seaside or in the country, to emigrate and to adopt what can be considered ideal methods. The average workman can no more take such advice than cease work altogether. He might certainly be advised that open-air work and country residence are the best conditions if he can manage to get them, but failing that possibility he should be specially advised as to the best way to avoid and counteract the evils of his own occupation. If he is a clerk he might be advised as to his choice of neighbourhood for residence, the best kind of bedroom and its arrangement, the sovereign advantages of the open window, the best food to take and the things to avoid, the importance of strict sobriety, the amount and nature of out-door exercise, the best clothing, and so on. The instructions might well be written to insure complete understanding. In each case the advice should be fashioned to suit the individual case. Above all, do not let our patient leave us with the belief that he is inevitably condemned to death if he goes back to his old trade and home. Tell him, rather, how to improve his environment and counteract its influence, and instil into him the hope that by following closely the advice given him he will be safe.

The discharge of the patient trained in the ways of the disease and the means of its prevention will be an invaluable aid in our work to improve the environment of the working classes generally. There are already organisations in existence for the propagation of knowledge of tuberculous infection and its prevention among the working classes and a great field of propaganda is ready for their cultivation. The organised working classes who are members of the great friendly societies and trade unions can be best approached through these organisations, which have a demonstrable financial interest at stake. The response which has been given to the efforts of the National Association for the Establishment and Maintenance of Sanatoria for Workers is a good augury of the success likely to attend the attempt to enlist the support of the masses through the agency of their own organisations. One of the most striking events of recent years was the success of the Labour party at the last general election, which proved if once the interest of the worker can be aroused he has it in his power to accomplish much. We want to arouse him and to convince him of the need of health reform, and we cannot do better than adopt the same methods of propaganda as were adopted by the Labour party. There are hundreds of papers issued by the various societies for their members' information which are willing and anxious to insert articles on the questions we want to bring before them; there are hundreds of working men's clubs where lectures and discussions could be organised; and there are hundreds of meetings and conferences of working class societies every year where the question could be introduced. At present this field is worked only by the enterprising patent medicine quack with his advertisements except so far as the National Association for the Establishment and Maintenance of Sanatoria for Workers has utilised it for its purposes. There are other societies which could help in the work, if the opportunities are to be completely utilised. Educate our workers and convince them of the necessity of reform; let the reform come *from* them and not be thrust *upon* them, and success is assured.

There is no need to discuss here the machinery for reform. Political and municipal questions, the great problems of housing, transit and factory legislation, are involved with all the interests which are related to them, but the way to inaugurate a sure movement in the direction of practical reform in public and private health is to convince the masses themselves of its necessity. The sanatorium is the object lesson in the movement among the organised workers. We must not confine our work to the learned and technical press, the learned and technical societies, we must preach our gospel in the workshop and the market place, in all places where the workers meet, and in all papers which the workers read. The agency of the trade unions and friendly societies will help us to do this but it requires technical and expert guidance. One of the ideals to be aimed at in the prevention and cure of consumption, then, is to bring about a *rapprochement* and eventual alliance between

[4] L'État de la Lutte contre la Tuberculose en Allemagne, 1905, p. 228. Mémoire to the Paris Congress. Published by Professor B. Frankel.

the medical societies and these great working-class organisations. The work has been commenced and perhaps this article will help in its completion.

One of the results of the improvement of method in the sanatoriums and after-care colonies may well be that a larger number of cases will leave who are willing to adopt a new mode of obtaining a livelihood under new conditions. How are we to meet this increased demand for open-air and country work? With a few notable exceptions employers fight shy of ex-sanatorium patients. In the stress of competitive industrialism and under the modern laws of compensation an employer cannot afford to employ invalids, partial invalids, or likely invalids. If we turn, as we naturally might, to the growing number of State and municipal employments there is difficulty in arranging without injustice to give preference to any body of workers over the remainder. The difficulty has already arisen in the effort to give preference in the employment of ex-soldiers. Nevertheless, it is in this direction that we must look for help. There are such occupations as rural postmen, gardeners' assistants under county councils, keepers in parks and other open spaces, and the lighter type of messenger and porter work under Government and public bodies which might well be filled by nominations from publicly controlled sanatoriums or after-care colonies. If any extensive works in afforestation and shore reclamation are undertaken to relieve unemployment some of the lighter work should be set aside for consumptive "out of works." The Local Government Board, the Board of Trade, and the Post Office might be approached by a representative deputation of workers and medical men and these views laid before them. At any rate, the object of this article will have been attained if it shows a reasonable ground for believing that (1) a coöperation of working classes and medical men; (2) an intelligent and continuous appeal to the reason of the patients; (3) an organised and comprehensive system of mental guidance adopted throughout the whole treatment and after; (4) a thoughtful and methodical scheme of employment during treatment; and (5) the development of full time employment in after-care colonies attached to the sanatorium before returning to occupation will go a long way to assist in the combat against industrial consumption, both by therapeutic and prophylactic means.

# VITAL STATISTICS.

## HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8720 births and 5652 deaths were registered during the week ending March 2nd. The annual rate of mortality, which had been equal to 20·9 20·4, and 17·8 per 1000 in the three preceding weeks, rose again to 18·4 in the week under notice. During the first nine weeks of the current quarter the death-rate in these towns averaged 19·6 per 1000, the rate during the same period in London being 19·9. The lowest annual death-rates in the 76 towns during the week were 5·8 in Hornsey, 8·3 in King's Norton, 9·1 in Gateshead, and 11·1 in Leyton and in Handsworth; the rates in the other towns ranged upwards to 25·0 in Oldham, 28·3 in Newport (Mon.), 28·8 in Grimsby, and 32·2 in Merthyr Tydfil. The 5652 deaths in the 76 towns showed an increase of 183 upon the number returned in the previous week, and included 440 which were referred to the principal epidemic diseases, against 412 and 390 in the two preceding weeks; of these, 162 resulted from measles, 117 from whooping-cough, 60 from diphtheria, 39 from scarlet fever, 36 from diarrhœa, 26 from "fever" (principally enteric), and not one from small-pox. The deaths from these epidemic diseases were equal to an annual rate of 1·4 per 1000 in the 76 towns, the rate from the same diseases in London being 1·3. No death from any of these epidemic diseases was registered last week in Huddersfield, Coventry, Bournemouth, or in three other of the 76 towns; the annual death-rate therefrom, however, ranged upwards to 4·8 in Newport (Mon.), 6·0 in West Bromwich, 6·8 in St. Helens, and 8·9 in Grimsby. The 162 fatal cases of measles showed a marked increase upon recent weekly numbers and caused an annual death-rate of 1·9 in Aston Manor, 2·6 in Devonport, 5·6 in St. Helens, 6·0 in West Bromwich, and 6 6 in Grimsby. The 117 deaths from whooping-cough also showed an increase, the highest annual rates therefrom being 1·7 in Rotherham, 1·9 in Blackburn, 2·0 in Middlesbrough, and 2·1 in Willesden. The 60 deaths referred to diphtheria, however, showed a further decline from recent weekly numbers, this disease showing the greatest proportional mortality in Hull, Sunderland, and Merthyr Tydfil. Scarlet fever caused death-rates equal to 1·2 in Walthamstow and to 2·1 in Newport (Mon.). Of the 26 deaths referred to "fever" six occurred in London, three in Liverpool, and two in Oldham. No case of small-pox has been under treatment in the Metropolitan Asylums Hospitals since the end of June last. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had steadily declined in the nine preceding weeks from 3846 to 2928, further fell to 2878 in the week under notice; 326 new cases of this disease were admitted to these hospitals during the week, against 311, 368, and 322 in the three previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 527 and 379 in the two preceding weeks, rose again to 432 in the week under notice, and exceeded by 12 the corrected average in the corresponding week of the last five years. The causes of 63, or 1·1 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-upon-Tyne, and in 44 other of the 76 towns; the proportion of uncertified deaths, however, again showed a marked excess in Birmingham, Liverpool, Bootle, St. Helens, and South Shields.

## HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 23·0, 22·0, and 18·8 per 1000 in the three preceding weeks, rose again to 20·3 in the week ending March 2nd, and exceeded the rate in the 76 English towns by 1·9. The rates in the eight Scotch towns ranged from 13·2 and 17·4 in Greenock and Edinburgh to 22·0 in Glasgow and 25·4 in Perth. The 706 deaths in the eight towns showed an increase of 52 upon the number in the previous week, and included 98 which were referred to the principal epidemic diseases, against 105, 84, and 71 in the three preceding weeks. These 98 deaths were equal to an annual rate of 2·8 per 1000, which exceeded by 1·4 the rate from the same diseases in the 76 English towns; they included 47 which were referred to "fever," 25 to whooping-cough, 10 to diarrhœa, six to diphtheria, six to measles, four to scarlet fever, and not one to small-pox. The deaths referred to "fever," which had been 33, 49, and 25 in the three previous weeks, rose again to 47 in the week under notice, and included 41 in Glasgow (a higher number than in any previous week of the present epidemic), three in Edinburgh, two in Paisley, and one in Leith; 37 of these "fever" deaths in Glasgow, all the three in Edinburgh, and one each in Leith and in Paisley were certified as cerebro-spinal meningitis. The 25 fatal cases of whooping-cough also showed an increase: 20 occurred in Glasgow and two in Edinburgh. Seven of the ten deaths attributed to diarrhœa were returned in Glasgow. The six deaths from diphtheria included two in Glasgow and two in Edinburgh. Two fatal cases of measles occurred both in Edinburgh and Leith; and three of the four deaths from scarlet fever were recorded in Edinburgh. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 178, 168, and 161 in the three previous weeks, further declined to 124 in the week under notice, and were 29 below the number in the corresponding week of last year. The causes of 28, or 4·0 per cent., of the deaths registered in the eight towns during the week were not certified or not stated; the mean proportion of uncertified deaths in the 76 English towns during the same week did not exceed 1·1 per cent.

## HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 31·4 and 27·1 per 1000 in the two preceding weeks, rose again to 28·6 in the week ending March 2nd. During the first nine weeks of the current quarter the death-rate in the city averaged 28·6 per 1000; the mean rate during the same period did not exceed 19·9 in London and 20·0 in Edinburgh. The 214 deaths of Dublin residents during the week under notice showed an increase of 11 upon the number returned in the previous week, and

included nine which were referred to the principal epidemic diseases, corresponding with the number in each of the two preceding weeks. These nine deaths were equal to an annual rate of 1·2 per 1000, and included seven from whooping-cough, one each measles and diarrhœa, and not one either from small-pox, scarlet fever, diphtheria, or "fever." The fatal cases of whooping-cough showed an increase upon recent weekly numbers. The deaths in the city included 43 of infants under one year of age and 74 of persons aged upwards of 60 years; both these numbers showed an increase. Three deaths from violence and two inquest cases were registered; and 92, or 43·0 per cent., of the deaths occurred in public institutions. The causes of six, or 2·8 per cent., of the deaths registered during the week were not certified; the percentage of uncertified deaths in the week under notice was equal to 5·2 in Edinburgh, while it did not exceed 0·1 in London. The 204 deaths registered in Belfast during the week ending March 2nd included 24 certified as due to cerebro-spinal meningitis or cerebro-spinal fever.

## THE SERVICES.

### ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: E. Corcoran to the *Queen* on recommissioning, and W. A. Whitelegge to the *Essex*. Staff Surgeons: W. G. Westcott to the *Adventure*, A. H. Jeremy to the *Forward*, E. S. Tuck to the *Foresight*, and W. R. Trythall to the *Skirmisher*. Surgeon B. Pick to the *Queen* on recommissioning.

### ROYAL ARMY MEDICAL CORPS.

Captain E. Bennett has assumed medical charge of families and departments, Portsmouth, vice Captain W. M. B. Sparkes. Major T. McCulloch, from the London District, has been appointed for duty in India. Surgeon-Lieutenant-Colonel A. A. Watson, Army Medical Reserve, has been selected for employment to assist the medical officer in charge of troops and military hospital at Preston. Lieutenant Marcus G. Dill is seconded for service with the Egyptian army (dated Feb. 8th, 1907).

Lieutenant-Colonel W. Babtie, V.C., C.M.G., has been selected for the appointment of Inspector of Medical Services under the new army plans.

The undermentioned Lieutenant-Colonels retire on retired pay (dated March 6th, 1907): Ernest O. Wight and Robert E. Molesworth. Major Lawrence E. A. Salmon retires on retired pay (dated March 6th, 1907).

The undermentioned Lieutenants are confirmed in that rank: Cuthbert G. Browne, George De la Cour, Valentine G. Johnson, John W. L. Scott, Gerald H. Stevenson, William H. Forsyth, Archibald C. Amy, Alfred H. Heslop, Wright Mitchell, James A. B. Sim, Edward J. Elliot, Edward Gibbon, Robert W. D. Leslie, Edward B. Lathbury, Cecil Scaife, Daniell M. Corbett, Michael J. Lochrin, Ernest D. Caddell, John R. Foster, William W. Boyce, Owen C. P. Cooke, Duncan Coutts, Arthur M. Benett, George P. A. Bracken, Francis L. Bradish, James A. Bennett, Whiteford J. E. Bell, Charles W. Bowle, Hector L. Howell, William F. M. Loughnan, Thomas W. Browne, William I. Thompson, Carlisle Kelly, Dennis T. McCarthy, Ernest C. Phelan, John J. O'Keeffe, Reginald C. Galgey, and Edward J. Kavanagh.

### ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major James Mill to be Surgeon-Lieutenant-Colonel (dated Feb. 19th, 1907).

### ROYAL ARMY MEDICAL CORPS (MILITIA).

Captain (Honorary Lieutenant in the Army) G. J. D. Davies resigns his commission (dated Feb. 11th, 1907).

### IMPERIAL YEOMANRY.

The South of Ireland: Surgeon-Lieutenant F. F. MacCabe to be Surgeon-Captain (dated Feb. 15th, 1907). Staffordshire (Queen's Own Royal Regiment): Surgeon-Major E. W. Welchman resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated Feb. 11th, 1907).

### VOLUNTEER CORPS.

*Royal Garrison Artillery (Volunteers):* 1st Midlothian: Honorary Lieutenant in the Army William Macrae Taylor (formerly Surgeon-Captain) to be Surgeon-Captain (dated Feb. 11th, 1907).

*Rifle:* 2nd Volunteer Battalion the Prince of Wales's Own (West Yorkshire Regiment): Richard Bladworth to be Surgeon-Lieutenant (dated Jan. 14th, 1907). 1st (City of Bristol) Volunteer Battalion the Gloucestershire Regiment: John Alexander Nixon to be Surgeon-Lieutenant (dated Feb. 7th, 1907). 1st Nottinghamshire (Robin Hood) Volunteer Rifle Corps: Alexander Tydd Mulhall, to be Surgeon-Lieutenant (dated Dec. 15th, 1906). 5th (Glasgow Highland) Volunteer Battalion the Highland Light Infantry: Surgeon-Lieutenant T. D. Brown to be Surgeon-Captain (dated Feb. 5th, 1907).

### DEATHS IN THE SERVICES.

Deputy Surgeon-General Sir John McNeale Donelly, K.C.B., I.M.S. (retired), on Feb. 18th at Bray, county Wicklow, aged 76 years. He joined the Madras Medical Service in 1856, was promoted surgeon in 1868, surgeon-major in 1873, brigade-surgeon in 1883, and deputy surgeon-general two years later. He retired in 1890. He served with the Burmese Expedition of 1885–86 in charge of the medical department (mentioned by the Government of India and in despatches, medal and C.B.). He took part in the Chin-Lushai Expedition of 1889–90 (mentioned in despatches). From 1859 to 1874 he was Inspector-General of Prisons, Superintendent-General of Vaccination, Sanitary Commissioner, and Governor of the Central Prisons at Rangoon and Moulmein.

### THE NEW SCHEME OF ARMY REORGANISATION.

On Monday, March 4th, Mr. Haldane introduced a Bill in the House of Commons for the reorganisation of His Majesty's military forces, which, after a discursive debate, was read and passed a first time. In continuation of his long and elaborate speech in the House of the previous week Mr. Haldane on this occasion explained the scope and effect of the Bill in detail and more especially in relation to the establishment of county associations and the raising and maintenance of a territorial force. Beyond chronicling the event and that the second reading of the Bill is set down for April 9th, we have nothing to add to our remarks of last week. The scheme will no doubt be eventually adopted and tried, but short of this being done it seems to us impossible to say in the meantime how it will work out in practice and whether, without the adoption of some sort of general system of personal military training for national defence, the creation of a national army can be successfully carried out.

### ROYAL ARMY MEDICAL CORPS VOLUNTEERS (LONDON COMPANIES) BALL.

Under the patronage of Her Highness Princess Louise Augusta of Schleswig-Holstein a ball will be held at the Empress Rooms, Royal Palace Hotel, Kensington, W., on Wednesday, March 13th, in aid of the funds of the Royal Army Medical Corps Volunteers (London Companies). Her Grace the Duchess of Rutland, Lady Methuen, Lady Keogh, and Lady Gallwey are among the patronesses, and Surgeon-General Sir Alfred Keogh, K.C.B., Director-General, Army Medical Service; Major-General Lord Cheylesmore, C.V.O.; and Colonel A. T. Sloggett, C.M.G., P.M.O., London District, are among the patrons. Tickets, for which a charge of 15*s.* will be made, and further particulars may be obtained from Sergeant Ernest A. May, honorary secretary, Elmshurst, East Sheen, London, S.W., or from the patronesses.

### THE SIR GILBERT BLANE MEDAL.

The gold medal founded by the late Sir Gilbert Blane, Bart., to be given biennially, has been awarded by the Director-General of the Royal Navy Medical Service and the Presidents of the Royal College of Physicians of London and the Royal College of Surgeons of England to Staff Surgeon James W. W. Stanton, R.N., for his journal of H.M.S. *Suffolk*, 1905, and to Surgeon Bernard Ley, R.N., for his journal of H.M.S. *Algerine*, 1904.

### THE KING'S BIRTHDAY.

Notice is given in the *London Gazette* that the King's birthday will be celebrated in London and at all home stations on Friday, June 28th next. At all other stations His Majesty's birthday will be celebrated on Saturday, Nov. 9th next.

# Correspondence.

"Audi alteram partem."

## THE SACCULAR THEORY OF HERNIA.

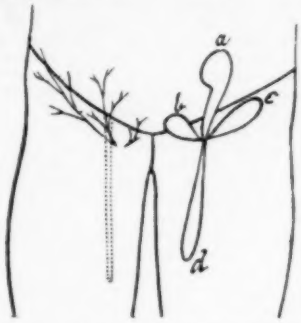
*To the Editors of* THE LANCET.

SIRS,—In THE LANCET of Nov. 17th, 1906, just to my hand, Dr. A. Keith has done me the honour to notice my paper on the Saccular Theory of Hernia[1] in a letter that by reason of its tone has occasioned uplifting of eyebrows on the part of other readers besides myself. A scientific position that cannot be stated simply and courteously were better not stated at all.

Let us suppose that two surgeons, A and B, operate upon two cases of inguinal hernia, precisely similar in every respect, including their mode of causation. A holds the saccular theory and simply removes the sac; B holds the view of Dr. Keith that the muscular weakness of the abdominal wall is the main cause of hernia and performs one of the numerous operations based upon that view. In both cases the result is perfect and the cure permanent. Now I would ask, Are we to conclude, because the results in these two cases are the same, that therefore the two methods and the principles governing them are equally correct? Certainly not. A will have proved conclusively that the cause of the hernia was the sac; B will have proved nothing and will have simply confirmed his erroneous view that the cause was the muscular weakness. Moreover, it is quite obvious that the method followed by A was right; that practised by B wrong.

This is the basis of the saccular theory, which Dr. Keith has stated is founded "upon a basis of embryological discovery." I cannot stay to argue as to the logical soundness of the above conclusions, but if Dr. Keith cannot or will not go thus far with me, let him put this article aside, and we will agree to differ. A and B go on operating until they have each done, say, 100 cases, and we will suppose the results as regards cure to be exactly equal. By this time A will be in a position to say that since removal of the sac is found practically always to cure the hernia, therefore the cause of the hernia must be the presence of the sac; B will still have learned nothing, but will be merely confirmed in his erroneous principle and faulty methods.

The above statement, however, by no means represents the total difference there now is between A and B. The hernial sac will from an early period have assumed a new and dominant interest in the eyes of A, causing him to inspect it closely, and people who look sometimes see. Given average intelligence, he can hardly fail to become an acute observer and he will learn to recognise numerous variations and peculiarities in the sac. On the other hand, it will have never occurred to B that there is likely to be anything of interest to the practical surgeon to be learnt by inspection of the sac. He holds with Dr. Keith the view that the peritoneal sac is "the least essential point in the pathology of hernia"; he does not look, and he consequently does not see. The net result of all this is that A concludes that inguinal hernia is invariably due to the presence of a sac, which is almost always formed by some portion, or the whole, of the processus vaginalis; B scoffs. Meanwhile the study of the femoral sac has been found to provide matter of great interest. Certain features are noted which render it perfectly certain that they are not formed in the way hitherto believed; and certain other features, notably the various positions they assume, suggest most strongly the view that the sacs must be of congenital origin. In order that there may be no vagueness, I reproduce here a detailed description of the appearances observed in certain femoral sacs, showing they are not formed in the way Dr. Keith thinks they are. These appearances were described in my presidential address before the Medical Society of Victoria, but owing to exigencies of space had to be omitted from the report that appeared in THE LANCET of March 12th, 1904. I now recount such particulars as appear to be of especial significance and I must also reproduce a figure that I have previously employed, showing the position assumed by femoral sacs on the one side, for comparison with those assumed by some undoubtedly congenital structures on the other. Out of nine femoral sacs that I had at that time observed, four merit special notice which shall be brief. They are as follows:—




CASE 1 (sac marked *a* in Fig.).—The patient was a young woman; the duration of the hernia was nine years. When she stood up the large sac, when not occupied by the hernia, filled with fluid, forming a hydrocele on the front of the groin and abdomen. The sac was removed in 1901; there is no sign of return.

CASE 2 (sac marked *b*).—The patient was a stout man, aged 36 years. The hernia had been regarded as an inguinal hernia, and treated with an inguinal truss, which was, of course, inefficient. The fact that it was a femoral hernia was only discovered at the operation. The sac was quite easily traced up the crural canal and removed; operation was performed five years ago. I see him frequently; the result has remained perfect.

The two foregoing cases are remarkable on account of their position. The next two are equally noteworthy by reason of other characters.

CASE 3.—A woman, aged 32 years, was operated on for left femoral hernia in 1902. The hernia was of two years' standing and she had never worn a truss. On exposing the sac it presented the following remarkable characters. It was an exceedingly dense fibrous structure inseparably connected with the surrounding areolar tissue, fat, and lymphatic glands, so that its removal could only be effected by dissection throughout. There was no peritoneal lining, but the interior bore a somewhat remarkable superficial resemblance to the interior of the heart, presenting irregularly arranged columns of dense fibrous tissue of varying thickness, crossed in all directions. Its neck was thick and inseparably connected with the walls of the canal, so that it was impossible to draw it down in order to apply a ligature. I had to be content with passing a purse-string ligature round the neck where it was accessible. Specimen shown.

CASE 4.—A woman, aged 32 years, from whom a femoral sac was removed, which proclaims its congenital origin in a yet different way from any others I have yet seen. It may be termed an hour-glass sac. The upper compartment has alone been the seat of hernia, as will be obvious upon inspection, owing to the narrowness of the constriction and the small size of the lower compartment. Specimen shown.

Dr. Keith is quite confident about the origin of these sacs; he holds that they are formed by out-pushing of the peritoneum through the crural canal by intra-abdominal pressure. This being so, it would be interesting to hear how he gets over the fact that in Case 3 the sac was not formed by peritoneum at all and that in Case 4 the appearances were obviously quite incompatible with his view. Again, turning to the positions assumed by femoral sacs, would he kindly explain why, upon any anatomical (post-natal) theory, one femoral sac should pass up the abdomen like *a*, another down the thigh as indicated by *d*, and yet others should occupy the positions indicated in the diagram by *b* and *c*. The positions assumed by these sacs are perfectly explained by the theory of their congenital origin; if Dr. Keith can suggest any other explanation I shall be glad to be enlightened.

The four cases above quoted are examples of femoral sacs presenting specially striking features; all the others I have operated on were of the commoner type, the sacs being usually of about the size of a pigeon's egg or larger, and sometimes tending to pass upwards and outwards, parallel with

[1] THE LANCET, Nov. 3rd, 1906, p. 1197.

Poupart's ligament, like *c*. I have been accustomed to draw attention to certain characters to be seen on close examination of these sacs which would alone, and unsupported by other evidence, render it practically certain that they are not formed in the way Dr. Keith supposes they are. I can, however, now afford to dispense with their evidence and utilise my space more profitably by an examination of the most interesting evidence which Dr. Keith has himself contributed to our knowledge in respect of the saccular theory. I must first, however, draw attention to an extraordinary tangle that has arisen, produced by the following factors which I will endeavour to state concisely: (1) I stated that the femoral sac is a congenital structure and is never acquired; (2) Mr. Murray examined 100 bodies and found femoral sacs with quite unexpected frequency; and (3) Dr. Keith shows, I think, quite clearly that these sacs are of post-natal and not of pre-natal origin, and concludes quite correctly that Mr. Murray and I were misled.

I wish it to be clearly understood that I have no right whatever to implicate Mr. Murray in this admission. He may differ from me in this matter, but I am personally quite convinced of the correctness of Dr. Keith's interpretation of the origin of these sacs. I must own to having been somewhat troubled about the frequency with which femoral sacs were found in Mr. Murray's series, and it will be remembered that I expressed surprise at it in my recent paper. It did not accord with what clinical experience would lead us to expect that they should be so frequent and I was vaguely conscious that there must be some source of error of the precise nature of which I was ignorant. I therefore welcome Dr. Keith's explanation as a genuine and very important addition to my knowledge with respect to hernia. Would it not, however, be a strange thing if a disclosure which smooths away my difficulties should in reality prove adverse to the saccular theory? Dr. Keith in his letter quotes my statement that "there is not a single fact at our disposal which, if scrutinised closely enough, is not at once in revolt against the traditional view as to the etiology of hernia and in complete harmony with the saccular theory." He quotes it only to curtly deny the correctness of it. "The opposite," he writes, "is the case. ..... Every fact, embryological, anatomical, and pathological, when closely scrutinised, is in revolt against Mr. Russell's theory." Now I propose to do this. Here is a fact, and an important one; it is Dr. Keith's own piece of evidence. He has known of it for years, while I have only learnt of it from him within the last few days. He can hardly therefore object to my taking it as a test. I am going to closely scrutinise it, and I am going to demonstrate that it is "in revolt against the traditional view and in complete harmony with the saccular theory," and that Dr. Keith has completely failed to correctly interpret the significance of his own facts.

First, I understand that these little femoral diverticula are formed by the pushing outward of the peritoneum through the crural ring; and that this is seen most frequently and most typically in elderly people after years of coughing as the result of chronic pulmonary disease. Hence Dr. Keith concludes, I understand, that they are the result of repeated and excessive pressure on the abdominal contents produced by coughing. In other words, these individuals acquire these diverticula because they are more markedly subject to hernia-producing conditions than any other people. I ask, if this is so, why do all these people get little diverticula only? Why do they not get femoral hernia?

Again, what proportion of people who come to the surgeon with femoral hernia are suffering with chronic lung disease? Again, a rule-of-three sum. If it takes several years of coughing to produce one of Dr. Keith's little diverticula, how many years of coughing will it take to produce a femoral sac such as is represented in the figure and which Dr. Keith thinks is produced in the same way? And how is it that such sacs are seen in young people who do not cough; and occasionally in children? And why do women whose occupations are relatively light have femoral hernia much more commonly than men whose occupations are laborious? And why is there no relationship between specially laborious occupations and femoral hernia? Nor between pregnancy, large tumours, chronic ascites, and femoral hernia? And why, when the sac is removed is there little or no tendency for it to recur? and so on.

Again, Dr. Keith has examined the femoral canals in 70 fœtuses and has found no vestige of a femoral sac. From this he concludes quite correctly that the femoral diverticula that misled Mr. Murray and me are of post-natal origin. But when from the same data he goes on to derive "positive evidence" as to the falsity of the saccular theory of hernia he obviously confuses the issues and reasons from false premisses in a way that is disconcerting. Dr. Keith's method of determining what constitutes positive evidence seems to be, to express it gently, a little arbitrary, and in any case the drawing of positive conclusions from purely negative findings is apt to prove a hazardous proceeding. It is almost incredible that Dr. Keith should have failed to see, what would surely appear to be sufficiently evident, that the moment he has demonstrated the true nature of these femoral diverticula is the precise moment at which the investigation ceases to provide him with any evidence whatsoever adverse to the theory of the congenital origin of the femoral sac, and for this reason. The basis of comparison at once ceases to be the percentage of diverticula shown in Mr. Murray's series and becomes instead the percentage of people who actually have femoral hernia. When, therefore, we find that the "positive evidence" that Dr. Keith proclaims so triumphantly is actually based on the fact that no one of his fœtuses showed signs of having suffered from chronic cough we are conscious of being carried up into logical high altitudes that make us a little giddy. The actual ratio of the subjects of femoral hernia to the entire population is I know not what, but it is certainly not more than one in many hundreds; yet if we were to take 70 unselected individuals and were to find no case of femoral hernia among them, we should be justified, according to Dr. Keith's method of reasoning, in proclaiming this fact as "positive evidence" that no such thing as femoral hernia exists. Thus the positive evidence against the saccular theory, which Dr. Keith has extracted from his investigation of the 70 fœtuses, turns out on examination to amount to exactly nothing and to be null and void. The truth is that the saccular theory, so far from being "based on embryological discovery," as Dr. Keith has stated it to be, is just a matter in which we cannot look to the embryologist for any deliberate assistance whatever. A femoral sac may and probably will be seen some day in a fœtus by mere chance. But to undertake the examination of hundreds of fœtal femoral canals by means of such elaborate methods as would be necessary to exclude the possibility of oversight would be both impracticable and unpractical.

*Conclusions.*—To any one who may have followed the foregoing arguments it will by this time be clear that the whole difficulty has arisen from Dr. Keith's failure to distinguish between two perfectly distinct phenomena that are in no real relation to one another, and using them indiscriminately as the basis of argument. These two distinct phenomena are the femoral diverticula on the one hand and the sacs of femoral hernia on the other. Dr. Keith may be tempted to retort that I did the same thing. True, but there are some rather important differences, and had I been, like Dr. Keith, for years in possession of both sets of facts I should hardly have been confusing them up to a few days ago. When, however, we come to scrutinise the actual significance of these femoral pouches that Dr. Keith has described we make a discovery of extraordinary interest. I think it is perfectly clear from Dr. Keith's own showing that these diverticula actually represent *the maximum degree of out-pushing of the peritoneum possible* at the femoral ring as the result of excessive and repeated rise of the intra-abdominal pressure. This being so, it is equally clear that Dr. Keith's contention that surgical femoral hernia is caused in the same way is proved to be completely erroneous. It is also the fact that Dr. Keith, in demonstrating the true nature of these diverticula, has quite unwittingly made the most important contribution towards establishing the truth of the saccular theory of femoral hernia that has been made since the publication of my presidential address before the Medical Society of Victoria three years ago. I then adduced a very considerable body of consistent evidence to show that it was impossible for femoral hernia to be produced in the manner usually supposed and which Dr. Keith upholds—viz., by the pushing out of the peritoneum by intra-abdominal pressure. Dr. Keith has now furnished us with evidence as to the utmost that the intra-abdominal pressure is really capable of effecting, and his evidence falls completely into line with the whole of the reasoning upon which the saccular theory rests and contributes largely to the confirmation of its truth. The occurrence of these diverticula, moreover, comports in an interesting way with certain observations I have made and in which I have laid much stress as to the mobility of the pelvic peritoneum and the part that it plays in hernia.

I have pointed out that this is such as to permit only a small amount of peritoneum to prolapse through the crural ring *and not more*. I have had occasion to dwell on this fact in explaining the *rationale* and technique of operation. Its consideration also furnished the foundation for the following remark: "I venture to assert that any *material* enlargement of a femoral sac as the result of the presence of hernia is impossible."[2]

It is scarcely needful for me to allude to Dr. Keith's remarks upon inguinal hernia which consist merely in a re-assertion of what I believe to be venerable errors based upon insufficient and inaccurate reasoning, and long since proved to be erroneous by the hard logic of clinical experience and observation. When, however, he writes, "it is scarcely conceivable that a saccular theory of hernia could be formulated by anyone familiar with the anatomy of the groin," I recognise at once that here, at any rate, appearances must go against me. Such a statement coming from an eminent anatomist would appear to carry such weight as I alone could not successfully withstand. I have, however, been favoured by fortune, and the facts again go decisively against Dr. Keith. We have recently welcomed to Melbourne a distinguished anatomist from the Edinburgh school and on reading Dr. Keith's letter I at once sought Professor R. J. A. Berry to find out whether his views and teaching coincide with those of Dr. Keith. I found to my great gratification that Professor Berry, although working in precisely the same sphere as Dr. Keith and, like him, without much aid from clinical experience, has gradually evolved and taught independent views as to inguinal hernia completely harmonising with the saccular theory.

The fact that Professor Berry as the result of thoughtful reasoning upon purely anatomical, as distinguished from clinical, grounds should have come to precisely the same conclusions that I have is surely a sufficient answer to Dr. Keith's suggestion that the holding of the saccular theory is incompatible with a familiar knowledge of the anatomy of the inguinal region. There is at least one sentence in my recent paper with which Dr. Keith will, I know, cordially agree: "The saccular theory will fail or prevail as it is false or true," and I must leave it at that. Obvious reasons of time and distance make it impossible for me to take part in any controversy. Any further contribution that Dr. Keith may make to the subject is assured beforehand of respectful attention, but it is expected that anything he may write shall bear the stamp of caution, and thoughtfulness, and sincerity, and, it should surely be needless to add, of politeness.

I am, Sirs, yours faithfully,

Melbourne, Jan. 1st, 1907. R. HAMILTON RUSSELL.

## INDUSTRIAL DISEASES.

*To the Editors of* THE LANCET.

SIRS,—A Departmental Committee of the Home Office is now inquiring into the question of industrial diseases within the meaning of the schedule of the Workmen's Compensation Act, 1906. I think it is of vital importance that only those diseases which can be definitely and specifically proved to be the result of a certain occupation should be so scheduled. I do not think any disease which anyone may get irrespective of occupation should be so scheduled. We are all mortal, we have all to die from something, and, bearing this in mind, every occupation, or even want of occupation, may to an indefinite extent influence the disease which may finally prove fatal.

Of course, there are undoubtedly certain industrial diseases which for all practical purposes no one would possibly get unless they were following the occupation at which they could contract them—as, for example, miner's worm and anthrax. On the other hand, there are certain general diseases, such as anæmia, rheumatism, and certain chronic chest complaints, which anyone may get irrespective of occupation, although I will not say that certain occupations would not act as predisposing causes to such diseases. These diseases, in my opinion, are not accidental diseases, and if they are included as such the paths of fraud will be made very easy and also lead, not only to litigation being very much increased, but will also cause a great deal of friction between employer and employee.

In scheduling these industrial diseases (if you are going to include general diseases which certain occupations may have a strong predisposing influence in bringing about), I think the occupation should be scheduled also, so that a man suffering from a general disease, working at an occupation in which there was no strong predisposing influence at work, should not be in the same position as a man contracting the same disease in an occupation in which there was a predisposing influence at work. For instance, an agricultural labourer might be suffering from some chronic chest mischief and so might a stone grinder. It might be natural to the former, but unnatural to the latter, and I think this should be distinguished. If this is not made very clear the employer will have an indefinite responsibility put upon him. The following are a few of the industrial diseases about which the Departmental Committee are now making inquiries.

1. *Chronic carbon monoxide poisoning.*—The symptoms of chronic carbon monoxide poisoning are the lowered condition of general health, anæmia, and malnutrition. There is absolutely no definite symptom for this condition, and it is open for anyone who might be brought in contact occasionally with small quantities of this gas to say that he was suffering from chronic carbon monoxide poisoning, although he may be suffering from a drinking bout or some other condition, which might bring about a lowered condition of general health. We could not possibly disprove this claim.

2. *Fibrosis of the lungs and chronic pneumonia.*—I have never yet come across a case of pneumoconiosis either at the Wigan Infirmary or in my capacity as medical adviser to the Northern Employers' Mutual Indemnity Company, but should it be scheduled in a general sort of way I can foresee a lot of trouble. It would be practically open for any employee working in a dusty atmosphere to claim compensation for any chronic lung mischief, and he would probably get it, as the border line between these various chronic lung diseases is too shadowy to be able to swear to, and the employee would get the benefit of any doubt. Also, in case of an employee going from one employer to another, how are you going to fix the individual responsibility?

3. *Miner's nystagmus.*—While admitting that this is an industrial disease how is it possible to tell under what employer it happened? (*a*) A man may have got it under one employer through working in a very cramped position in a badly lit mine and it may not be found out. He would go to another employer where he would not have to work in a cramped position and also where the light was very good. It might here be found out, although the conditions under which he was now working might possibly be bringing about a cure. (*b*) When is a man cured of miner's nystagmus? Now the treatment for miner's nystagmus is, bring him out on to the surface, he will then get cured, but if he goes down the pit again it will come back. Can we make that man go down the pit again? If we cannot we may have to pay him £1 per week compensation for the rest of his life although cured, for he may be getting £2 per week as a collier, but he is not worth more than £1 per week on the surface and we might have to pay the full difference. This, to my mind, is very serious, as I am convinced that miner's nystagmus is far more frequent than the profession generally think.

4. *"Miner's knee" and "beat-hand."*—I think that an exact definition of what these diseases really are would be advisable. Of course, in acute forms we should have no trouble. Surely we are not going to pay compensation for a chronic patellar bursitis in a collier, for he may have it all his life. These diseases are not necessarily confined to miners, for you can get "beat-hand" in rowing men or in any work or occupation in which the palm of the hand is used, as you may get "beat-knee" in anyone who is constantly kneeling down.

5. *Cardiac dilatation.*—I presume if this is scheduled it will be definitely stated what form of dilatation is meant and the trade to which it is applicable. Practically speaking, any man over 45 years of age, whether he is working as a labourer, whether he is leading a sedentary life or an intellectual one, might claim he had got a dilated heart. It is a very difficult thing to disprove, even in the post-mortem room, and although you may try to qualify it by saying that the heart must be acutely dilated, I can foresee a lot of trouble. For where are you going to draw the line? It would be comparatively easy in a very acute case, but this would be an accident under the present Act.

I have had special opportunities of coming to an opinion on the question of industrial diseases. My opinion after careful consideration is this. Unless these occupation

[2] THE LANCET, March 12th, 1904, p. 709.

diseases are very limited in number, the employers, in order to protect themselves, will have to have all their employees medically examined before taking them on. This would lead to many thousands of employees who are now able to get a good wage being rejected. As far as the rejected ones are concerned they would be thrown upon the workhouses and the rates would go up. As regards the unrejected ones, their labour would be at a premium, they would command very high wages, prices would go up, and therefore foreign competition would be increased.

I am, Sirs, yours faithfully,

ARNOLD J. GREENE, M.R.C.S. Eng., L.R.C.P. Lond.

Wigan, March 4th, 1907.

## ON THE CONDITION OF THE BLOOD-VESSELS DURING SHOCK.

*To the Editors of* THE LANCET.

SIRS,—Mr. J. D. Malcolm in his paper published in THE LANCET of Feb. 23rd deals with a subject in which it is more important that correct theoretical views should be entertained than in some other spheres in which there is a legitimate difference of opinion. This is so because an apparently logical inference drawn from certain premisses may very well guide treatment which may have unfortunate consequences, and it is little satisfaction to the individual to suffer in the wake of an unimpeachable syllogism. One cannot but admire the careful consideration Mr. Malcolm has given to the important subject with which he deals nor the tenacity with which he defends his thesis that the blood-vessels are actually contracted in shock. His argument, however, fails to carry conviction to my mind for several reasons, of which the following it may suffice to mention.

In the first place I hope I do not misrepresent Mr. Malcolm when I say that he appears to me to fix his attention too exclusively on the peripheral circulation. An active narrowing of the vessels, the blood-supply remaining the same and the heart itself not depressed in action, would necessarily result in the more forcible jetting of severed vessels, and Mr. Malcolm states that he is convinced from clinical observation that in shock this is so. His thesis would be successfully defended if these central and peripheral conditions could be accepted as normally occurring in shock. Indeed, one would be justified in concluding, were these things so, that any appreciable depression of vitality should be absent. But the experience of physicians certainly is that the cardio-vascular state in shock is one of abased central force accompanied by a simultaneous depression in the neuro-muscular activity of the peripheral circulation. The highest degree of shock as observed by physicians is associated with cardiac still-stand in diastole, both ventricles containing blood on necropsy and the venous system being engorged. There is nothing to show that this is not so, also, during life at the moment of such profound shock. The more gradual yet progressive depression of the cardio-vascular system in less sudden failure from shock is associated with diminished *left* ventricular and increased *right* ventricular repletion. This is observed after death and clinical signs indicate its presence during life under the circumstances mentioned. In the report of my remarks at the discussion on Mr. Malcolm's paper I observe that by a trivial error in your usually accurate account of the transactions of medical societies I am made to represent both ventricles as containing little blood under these circumstances. My experience, however, is as above stated.

This venous stasis in shock appears to me to account sufficiently for some of Dr. Crile's observations, in the interpretation of which Mr. Malcolm differs from that author, and to which I need not now refer at greater length. Again, Mr. Malcolm's argument drawn from the changes in the volume of one channel of a hypothetical river as compared with another which is supposed to be impeded, appears to me to be vitiated by the same failure to recognise the simultaneous depression of centre and periphery during shock. He quotes Dr. Crile as disputing this central fact but unless the mechanics of surgical shock are very different from those observed in the domain of the physician there is always an abasement of systolic cardiac force under these circumstances. The only circumstances under which I have observed peripheral loss of tension with *for a time* normal central impulse are those in which accidental hæmorrhage occurs in an otherwise healthy organism, conditions which in no way bear upon our present argument. In Mr. Malcolm's argument from the river in nature to the circulation in shock there is the important difference that the force, volume, and direction of the water are assumed to be the same although displaced in their channels. For these reasons then, if for no others, in Mr. Malcolm's closely reasoned argument, I confess that to my mind arterial depletion and venous repletion, in accordance with the long-entertained view, is the rule in shock, and any narrowing of arteries due to a comparative emptiness of blood in passively retracting elastic vessels. If these are also Dr. Crile's views, whose work I regret I have not yet read, they corroborate opinions long and generally held.

As touching Mr. Malcolm's argument from therapeutics based upon the beneficial effects of heat in shock, does not the good result flow from the arrest of arterial depletion and venous stagnation due to stimulation by way of the nervous system of the force of cardiac action, aspirative and propulsive? Given unabated central force the application of cold in shock might not do great harm, but if, as is generally believed, the reverse be the case, all experience teaches that the road to fatal syncope would lie through the depression of the surface temperature by cold no less certainly in medical contingencies than in such an exposure by shipwreck as the country has recently had to lament off the sullen coast of Holland.

My apology for again drawing attention to this subject, Sirs, is the importance of the question raised in Mr. Malcolm's paper, his own standing as an earnest and observant surgeon, and the admirable boldness with which he has, in my view, shivered his lance on the tough shield of accepted opinion in this matter.

I am, Sirs, yours faithfully,

ALEXANDER MORISON.

Upper Berkeley-street, W., March 2nd, 1907.

## MEAT DIET AND THE TEETH.

*To the Editors of* THE LANCET.

SIRS,—Dr. Spriggs attempts to cover his retreat from an untenable position by bringing into prominence side issues which have little bearing on the matter in dispute. I am conversant with the methods which he describes in the paper to which he refers me, and with all deference to Dr. Spriggs I consider that, however suitable for the purposes of a class, it would be impossible to find methods more unsuited to the carrying out of an extensive research. I know that it is almost impossible to prepare good sections of human teeth by the paraffin method, but rats' teeth are so small that with care it is quite possible to obtain a large percentage of success, and as thousands of serial sections were cut and examined for the purposes of this investigation I maintain that, for anyone who has anything else to do in life, the paraffin method, with all its drawbacks, was the only possible one to adopt.

In conclusion, may I suggest to Dr. Spriggs that he should not give too much credence to the appearances of photomicrograms, however excellent he may consider them, especially in regard to such minute details as the appearances of individual cells, for, as a great histologist said many years ago, and as every tyro knows now, it is only with one's finger on the fine adjustment that the intimate structure of a tissue can be unravelled.

I am, Sirs, yours faithfully,

Edinburgh, Feb. 23rd, 1907. J. H. GIBBS.

## BLOOD CULTURE IN TYPHOID FEVER.

*To the Editors of* THE LANCET.

SIRS,—Dr. F. G. Bushnell in a communication upon the value of blood culture in typhoid fever in THE LANCET of Feb. 16th, p. 425, records a case which he considers to "compare" with one reported by myself to the Pathological Society on Jan. 15th last. Interesting as Dr. Bushnell's case is it contrasts rather than compares with my own case. 1. The clinical condition in my case did not suggest typhoid fever, so that the isolation of the bacillus (upon the fifth day) did not "confirm the clinical diagnosis," as it did in Dr. Bushnell's case (in which the bacillus was isolated during the third week, when rose-spots, palpable spleen, diarrhœa, abdominal distension, &c., were present). 2. In my case the organism was isolated at a date in the disease when agglutinins are known often to be absent and the Widal test therefore negative. 3. But the point of chief pathological

interest in my case was the fact that the bacillus grew well *without* any dilution of the blood, refusing, therefore, to obey Dr. Bushnell's dictum that "it is imperative *to dilute the blood* well." I am aware, as I stated in reporting my case, that this dictum is usually held to be true, but I think we do ill to copy it from continental authorities without verification for ourselves. Since reporting my case I have again grown the typhoid bacillus from the blood with no more dilution than is given by the usual condensation fluid in an agar tube. That dilution is never needed I am not prepared to say, but that it is sometimes quite unnecessary I am certain.

I am, Sirs, yours faithfully,

Harley-street, W., Feb. 28th, 1907. THOMAS J. HORDER.

## CEREBRO-SPINAL MENINGITIS.

*To the Editors of* THE LANCET.

SIRS,—There are some points in the circular of the principal medical officer of the Local Government Board (quoted in your issue of Feb. 23rd) that seem to me to call for special comment and consideration. After remarking that the disease sometimes occurs in mild and anomalous forms that render identification difficult, the circular cites in illustration "the prevalence of what would seem to have been cerebro-spinal fever in Northamptonshire in 1890-91, where the malady was, for the most part, diagnosed as pneumonia or as sore throat, and by the occurrence of cerebro-spinal fever in Irthlingborough in the present year, where many of the persons attacked were regarded as suffering from influenza."

This ignores entirely the possibility of mixed infections, which I have often witnessed since the year 1890, though very seldom before. The cases that were diagnosed as pneumonia and sore-throat respectively were, in all probability, quite correctly so named, and it is just as likely that cerebro-spinal fever was also present either simultaneously or consecutively. And in those other cases "where many of the patients attacked were regarded as suffering from influenza," I find no difficulty in believing that they did so suffer, seeing especially that the influenza throat appears to be nowadays the usual precursor of an attack of meningitis. That an attack of influenza which has broken down the normal defences of the body and has caused a lesion in the throat should thus pave the way to the invasion of other pathogenic microbes is surely what we must expect if we reason about the causation at all. Nor is it a matter of theory only, for the conclusion so arrived at is abundantly confirmed by the results of experience. I am sure that friction frequently arises between practitioners on this point, and that much undeserved annoyance and even damage may be caused in this way to him who recognises cases of mixed infection when his diagnosis is openly contradicted by one who does not.

I am, Sirs, yours faithfully,

W. FLEMING PHILLIPS, M.B. Glasg.

Fairlie, N.B., Feb. 25th, 1907.

*To the Editors of* THE LANCET.

SIRS,—I am a regular reader of your valuable journal and I have followed with special interest the articles that have appeared about the cerebro-spinal meningitis epidemic in Belfast and Glasgow. I see that no mention has yet been made of the anti-meningococcic serum which is prepared by the "Institut zur Erforschung der Infektions-Krankheiten" in Bern. Although this serum is practically new I understand that it has proved successful in many cases, and I think it my duty to mention it to your readers, who could get fuller information by writing to the above-mentioned institute in Bern. I am, Sirs, yours faithfully,

Dr. R. DE LA HARPE, L.M.

Vevey, Switzerland, Feb. 27th, 1907.

## SOME POINTS IN DIABETES.

*To the Editors of* THE LANCET.

SIRS,—I have to thank you for having published an extract of my paper on diabetes. The extract contains the chief points of my treatise and enables the reader to get familiar with the facts which are closely associated with myself. This, however, you would not admit in your *résumé*, but you come to the conclusion that, "There is nothing particularly new in Dr. Arany's observations," &c. As far as this latter remark is concerned, I beg to say that if you go through the whole of the literature you will find that I was the first who called attention to the fact that the colder seasons of the year produce an unfavourable effect upon diabetes and I was also the first to give the causation thereof. It goes without saying that the conclusions I drew from the above fact are necessarily new as well, as there is no statement in the whole of the literature to the effect that a diet which suited the patient during the summer does not suit him in the winter. I do not ascribe too much importance to my observations, but I hardly think there is anybody who would not attach some scientific and therapeutic value to the symptom I described and I think I am fully justified in asking you not to deprive me of the right of priority which undoubtedly belongs to

Your obedient servant,

Carlsbad, March 1st, 1907. S. A. ARANY.

## IDIOPATHIC CYANOSIS.

*To the Editors of* THE LANCET.

SIRS,—From the letter which appears in THE LANCET of Feb. 23rd Dr. C. C. Douglas seems to think that we have not accurately represented the facts in relation to the case of methæmoglobinæmia which was recorded by him and Dr. G. A. Gibson in your columns a few months ago. We should be very sorry if this were so. In that article they report only one bacteriological observation, but on the strength of it they suggest the term "microbic cyanosis" to take the place of methæmoglobinæmia. At the same time they say: "It seems to us very desirable that these observations should not be taken as final, and if opportunity presents itself they will be repeated, especially those of a bacteriological nature." What we said in referring to their paper was: "These findings (i.e., the bacteriological findings) were not confirmed and the authors expressly state that they should not be taken as final." There does not seem to be any real difference in meaning between these two passages, for we are not aware that anything has been published in relation to their case since the original article in July, from which the words quoted are taken. If the bacteriological observation has been confirmed it is important that that should be reported.

We are, Sirs, yours faithfully,

SAMUEL WEST,
T. WOOD CLARKE.

March 2nd, 1907.

## THE RELATIVE SIZES OF THE MATERNAL PELVIS.

*To the Editors of* THE LANCET.

SIRS,—I write to point out two errors in my paper on this subject published in THE LANCET of Jan. 19th. In Table VI., p. 152, "Bengalis," length of the maximum diameter (last column), in the sixth line of figures from the top, for 4·737 read 4·787. In Table VII., p. 152, "Pelves of 4·125" inches conjugate, under the column headed "Bi-parietal diameter," second line from top of this series, for 2·397 read 3·397. This latter is, of course, much the more important correction.

I am, Sirs, yours faithfully,

J. C. HOLDICH LEICESTER, M.D. Lond.

Medical Officers' Quarters, Presidency General Hospital, Bhowanipur, Calcutta, Feb. 5th, 1907.

*** To send proofs to Captain Holdich Leicester in Calcutta would have caused great delay in the publication of his paper. We had to take on ourselves the responsibility of passing his tables for press and in so doing the errors occurred. In respect of the second slip we plead guilty, but in the first case Captain Holdich Leicester's "8" very closely resembles a "3."—ED. L.

## THE USE AND ABUSE OF SODIUM BICARBONATE.

*To the Editors of* THE LANCET.

SIRS,—I read with interest your annotation under the above heading in THE LANCET of Jan. 19th. I shall be much obliged if any of your readers will inform me through the medium of your journal the effects of taking sodium bicarbonate for a very long period on metabolism and what changes occur or lesions are found on the skin and hair during its long-continued internal use.

I am, Sirs, yours faithfully,

Vankaner, Feb. 7th, 1907. K. A. NÁNÁVUTTY.

# PORTUGUESE AND DUTCH MUNICIPAL ABATTOIRS.

## A VISIT TO THE LISBON AND THE AMSTERDAM SLAUGHTER-HOUSES.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

WHEN the Fifteenth International Congress of Medicine met at Lisbon in April last year it was stated that one of the most remarkable institutions connected with health questions to be seen in that town was undoubtedly the municipal slaughter-house. The history of this institution was related in these columns at the time under the heading of "What there is to be seen and studied at Lisbon."[1] Here not only is the slaughter-house municipal property but the slaughterers themselves are employed by the municipality. In the literal sense of the term not only private slaughter-houses but the butchers also have been abolished, seeing that they no longer kill or butcher the animals whose flesh they sell. Nor have the cattle-dealers been allowed to become butchers. From the public health point of view this is quite an ideal conception. It is most admirable to endeavour to raise the moral standard of tradesmen and to impress upon them that it is very wicked for a butcher, if he kills a diseased animal, to sell the meat and perhaps to injure his customers. It is better still to enact, and above all to enforce, laws punishing butchers who prefer to risk the health of their customers than to incur the certainty of financial loss by having a diseased carcass destroyed. But by far the wisest of all methods is to remove from butchers any such temptation. "Lead us not into temptation" seems to have been the maxim of the Portuguese legislator, and it would be difficult to deny its wisdom. In regard to meat-supply there are two parties who are directly interested in selling bad meat to the public; these are obviously the cattle-dealers who sell living animals and the butchers who sell meat. Therefore the Portuguese authorities exclude them both from the precincts of the slaughter-house. Cattle-dealers or butchers leave the animals at the gate of the slaughter-house. These animals are killed and destroyed if found unwholesome or converted into meat if sound. The municipal employees who do this work do not know to whom the animals belong; they have nothing to gain or to lose in causing some of them to be condemned as unfit for food. In Lisbon the retail butcher does not buy sheep or bullocks. He goes to the slaughter-house and buys meat and so as to satisfy his customers it is to his interest to buy only sound, good meat. The cattle-dealer, knowing that the municipal authorities will destroy the carcass of any unwholesome animal, has every interest to be very careful in his purchases and avails himself to the uttermost of the veterinary surgeon's advice.

The cattle market is close to the abattoirs. The longest railway journey which the cattle make before reaching Lisbon is that which lasts during the whole of the night. Though this is not a very long time, nevertheless the cattle are always given at least 24 hours' rest before they are killed. Within from half an hour to an hour's ride by rail to Lisbon there are fields where cattle can be put out to grass and to rest. The entrance of the slaughter-house is rather peculiar and recalls a bull ring. There are numerous shelters like those provided to enable the toreadors to escape from the fury of the bull. Also there are passages (or platforms) high up in the air, so that the attendants may walk about among the bulls but above them and lasso them from this safe altitude. It appears that Good Friday is the greatest killing day of the whole year. Everyone in Portugal, whether rich or poor, seems to think it essential to eat some meat on Easter Sunday, though on other days the mass of the people do not care very much for meat. The population of Lisbon numbers less than 400,000, yet some 500 bulls or bullocks and 600 sheep are slaughtered on Good Friday in the municipal abattoirs. The killing is done by a skilfully delivered stab in the back of the neck. It is a remarkable thing that though the Lisbon slaughter-house was built as far back as 1871, what is now considered a modern principle has been adopted. As butchers do not slaughter here there was no purpose served in providing them with private compartments to do their work away from the jealous observation of their rivals in the trade. A large central slaughter-hall was built, as lofty as a church, surrounded on all sides with windows, with the roof lantern-shaped along the whole length of its apex. From this windowed summit of the roof there descends a flood of light. Then there are smaller apertures lower down on each side of the roof and semi-circular windows in the upper portion of all the four walls. As a test of the light on a fine day the sensitised paper used in Wynne's exposure meter was coloured in 25 seconds. There are a good many interiors where it would be a matter of minutes not of seconds before this paper would become coloured.

The men who kill the cattle at Lisbon in no wise resemble the traditional heavy-looking, stolid, burly, florid-faced butcher. They are not specially strong men and certainly not big men. They are, on the contrary, small, light, and agile young men. It is skill and not strength that is required. They must be quick to seize the right moment and sure of hand, so as to strike precisely the right spot and thus to insure that death shall be instantaneous and without a struggle. The largest and central building is the slaughter-hall. It is surrounded by a fine open space with many trees that give shade and a relief of colour. On one side there are stables, with clean stone troughs holding clear drinking water for the animals. The floors of the stables incline steeply towards a drain and are made of squares of cement so indented as to prevent slipping. The closets provided for the convenience of the workers were, I was pleased to note, clean and very well kept. Another building was constructed especially for rendering the fat. It has two rows of windows in all the walls and also two sets of windows on the slant of the pointed roof. Most of the windows are always kept open. Near at hand there is a special department for cooking feet and heads. They are placed inside cauldrons and steam is played upon them. When thus sterilised and rendered tender they are hung in a place where great care is taken that they shall remain clean. In one of these buildings there is suspended on a wall a large case holding all kinds of strange objects which some of the animals killed had swallowed. Among these were a good many pocket knives and some crosses, but by far the greatest number were medals with effigies of the Virgin.

In a separate building blood is treated and converted into manure. The blood is placed in a sort of boiler which is played upon from the outside by steam. Then a piston-rod style of squeezer presses the water out and thus the blood is converted into a dry powder which sells at about 1½*d.* per pound. Under a part of these various buildings are cellars and here are placed the boiler and cool cellars for keeping the skins or hides which have not been tanned but are sprinkled with salt inside and carefully folded. Elsewhere a long building viewed from within the precincts of the abattoir appears to have but one storey. But on the outside there is a street at a much lower level and thus the cellar or basement of this building is only half a cellar since on one side it has windows giving on to a thoroughfare. This sort of semi-basement or cellar is well suited for the storing of the dried sausage skins for which the Lisbon abattoir has acquired some reputation and which received a special award at the Philadelphia International Exhibition. This is the coolest part of the building, for there is no cold storage here. Meat is not kept but is sold to the butchers on the day after that on which the animal has been killed. In this hot climate it would be difficult to keep meat. This is one reason why it is foolish to endeavour to obtain roast joints in hot countries. A joint unless cooked before rigor mortis has set in must be hung for some days before it is fit to eat. This during the greater part of the year would not be possible in Portugal.

Altogether, the Lisbon slaughter-house, though built 36 years ago, is one of the best-constructed buildings I have seen. Far better, however, as a guarantee to the public than the disposition of the building is the law which entrusts all the slaughtering to employees who can have no interest in smuggling on to the market suspicious or unwholesome meat. Such advanced methods and laws are surprising when found in full working order in a country like Portugal, which is a poor country, a small country, and a country about which so little is said that it may be thought to stand somewhat apart from the leading activities and progressive movements of European civilisation. Thus, for instance, we should expect to find greater

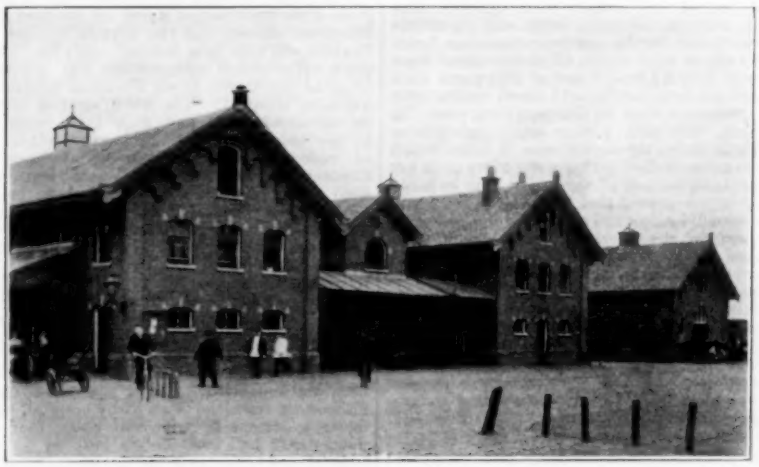
[1] THE LANCET, April 21st, 1906, p. 1136.

progress in Holland. This is also a small country which, like Portugal, has a glorious history of maritime achievements. But Holland has preserved much of its former prosperity. It has a more extensive commerce and greater wealth than Portugal. Nor would I venture to pronounce any definite opinion in comparing what the two countries have done in regard to the question of slaughter-houses and the protection of the public from the danger of consuming unwholesome meat. In Holland I have only seen one slaughter-house, that of Amsterdam, and I must say I prefer the Lisbon abattoir. This, of course, is an altogether insufficient experience to establish a comparison, particularly as there is a very much better slaughter-house at Maestricht which I have not seen. But in any case in Holland, as in most countries, the law allows butchers to buy and to kill cattle. The Dutch law urges municipalities to build municipal abattoirs, but it does not insist that the killing shall be done by employees who are independent of the cattle dealers and of the butchers.

In 1875 a Dutch law authorised local authorities to select suitable sites where public abattoirs might be built and the industries in the by-products established. According to this law public cattle-markets and slaughter-houses were constructed at Rotterdam in 1883 and at Amsterdam in 1887. As far back as 1851 a law authorised the local authorities to levy a tax on the slaughtering of animals to cover the cost of building abattoirs. This law was modified and strengthened in 1897 and the law of June 29th, 1901, sanctions the compulsory closing of all private slaughter-houses in districts where there is a public abattoir. Modern abattoirs with plant for making ice and cold storage have been built in 1899 at Roermond, in 1900 at Groningen and Nymeguen, at Utrecht in 1901, at Maestricht in 1902, at Leyden and Haarlem in 1904, and the abattoirs of Breda and Venloo are now in course of construction. These are all built on scientific principles, with ample light and ventilation, and watertight walls and floors, so that the fire hose can be turned on and every part thoroughly scoured out.

At Amsterdam the arrangements are not so good. There are long pavilions subdivided into private compartments which are let to butchers. The accompanying view was taken from the main entrance and shows that in a part of the building there is an upper floor, which is not a recommendation. The private compartments face each other and give on to the courts that separate the pavilions. When their private slaughter-houses were abolished the butchers were not compensated. At first they grumbled lustily, but in a few years they found that they could do their work as well, indeed better, at the public abattoir. No butcher would now desire to revert to the old system. The butchers at first also complained that the stamping of the carcasses gave a bad taste to the meat. They said that, by way of preserving the public health, the authorities poisoned the meat with ink. But soon other methods of marking the outside of the carcasses were introduced and the most fastidious can no longer detect any objectionable taste. There is a large well-lighted examination and stamping room at the Amsterdam abattoir. Here with the aid of mechanical appliances the carcasses are brought and examined. They are stamped three times after samples have been cut out from five different parts and examined under the microscope. One stamp certifies that a hog has been examined for trichina and the other marks relate to other forms of inspection. All meat brought to Amsterdam from the outside must be taken to the abattoir and there examined and stamped before it can be sold in the town. The lungs, liver, melt, kidneys, uterus, udder, and eyes must remain attached to the carcass, otherwise it will be rejected. Some meat, however, which is not so dangerous as to need to be destroyed is placed in a large stove and exposed to steam under pressure. When thoroughly sterilised it is sold to the poor for about 2*d*. instead of 6*d*. to 9*d*. per pound. The owner receives barely a quarter of what he would have obtained if the animal had been in a thoroughly healthy condition. There is also a quarantine department with a small slaughter-house for animals which are thought to be suffering from disease.

At the Amsterdam abattoir between 800 and 1000 bulls, cows, and bullocks are slaughtered per week, some 400 to 500 calves, 1300 to 1400 hogs, but only from 100 to 150 sheep. It is extraordinary how little mutton is eaten. A greater number of horses are slaughtered than sheep. There is a large separate department for the slaughtering of horses. Here the same pavement was used as for the horned cattle, where it had answered the purpose very well, but the iron hoofs of the horses soon broke it up. The non-porous hardware blocks cemented together would crack and split when struck with the iron shod hoofs of the horses, though they resisted the softer horny substance of the cloven hoof of a bull or cow. The long rows of shambles and, in fact, all the establishment drain into a sort of filtering cistern or tank. Pebbles and broken galley pots are put inside this large reservoir or cesspool to act as a filtering medium but it seemed to me that they serve no purpose whatsoever. The whole place smelt abominably and the water when it came out appeared if anything of a darker colour and was more foul than when it went in. The outfall into the sea is fortunately near at hand and it seemed to me that it would be preferable to drain directly into the sea than to make so abortive an attempt at filtering. However, and as already stated, it is at Maestricht rather than at Amsterdam that the Dutch have shown what they can do in the building of model municipal abattoirs.



The Amsterdam municipal slaughter-house; view from the main entrance.

## BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

*The Health Committee's Annual Report.*

ANYONE who carefully noted the weekly and quarterly reports of the medical officer of health during the year 1906 will not be surprised to find in the annual statement of the health committee that, although on the whole the health of the city has been very satisfactory, the death-rate is a little higher as compared with the previous year—that is, 16·8 per 1000 for 1906, as compared with 16·1 per 1000 for 1905. The birth-rate, on the contrary, has remained practically stationary, 29·3 per 1000 for 1906, as compared with 29·2 per 1000 for 1905. This is a very low rate, not so low as in some other large towns, but it compares badly with the mean for the ten years ending with 1905, which was 32·3 per 1000. The death-rate would probably have been lower than ever before had it not been for the increased mortality from diarrhœa and enteritis which was associated with the long period of hot, dry weather in the latter part of the summer and the early part of the autumn of 1906. Fortunately, however, the mortality from gastro-intestinal troubles was not by any means so great as it has been in previous years under comparatively similar conditions and we may therefore hope that a better knowledge of the management of children is gradually spreading amongst the working classes, for it is amongst their children that the mortality is greatest. Scarlet fever and diphtheria were more prevalent than in the previous year, but fortunately they were both of mild type. Of scarlet fever there were 1814 cases with only 53 deaths and of diphtheria there were 817 cases and 93 deaths. Typhoid fever, on the other hand, was less prevalent than in the preceding year, 191 cases as compared with 209, a new record being thus established. Unfortunately, the disease was of a somewhat severe type and 40 patients died, giving a mortality of 21 per cent. A very promising feature of the report is to be found in the statement which shows that the deaths from pulmonary diseases were 314 below the average of the preceding ten years. Apparently the efforts made to check these dangerous maladies are producing an appreciable effect. In association with this it is interesting to note that more care is being taken with the examination of milk for the presence of tubercle bacilli and with the methodical inspection of dairies which are within the city area. Unfortunately, though there is definite infection of the milk from certain sources outside the city, the authorities have no power over the dairies concerned. Of the seven principal zymotic diseases the three most fatal during 1906 were diarrhœa, 857 deaths; whooping-cough, 251 deaths; and measles, 277 deaths.

*The Children's Hospital.*

The annual report and the speeches made at the annual meeting emphasised the well-known fact that two things are needed by this institution—a new hospital and increased subscriptions. A new hospital is needed because the present one is not large enough, for since its foundation the population of Birmingham has trebled and the hospital has remained much as it was. It is also needed because the present building is not well adapted for its purpose. No definite sanitary defects can be said to be present, still the death-rate is greater than it should be, and it has been gradually increasing. Many factors are probably contributing to this result. No small wards are available for particularly serious cases, there are no means of isolating nurses who have been in contact with infectious cases, and the air-supply is not all that could be wished. It has been decided, therefore, that a new hospital must be built, but it is not yet settled where it shall be. The present site has many advantages; amongst others it is sufficiently central and accessible, but it is questionable if it is large enough, and the committee appointed to consider the matter will be wise if it makes the question of space one of great importance. At the same time it is not possible to avoid the question of the increased cost of maintaining a larger building. No doubt money can be got for the erection of a new building but it is not so easy to get means for the upkeep. During 1905 there was a deficiency of £153 on the year's work in spite of the fact that a legacy of £504 was devoted to current expenses; in 1906 by great economy the deficit was reduced to £68, and unfortunately the subscriptions for the year decreased by £63. These are rather serious facts which must be carefully considered in the formation of plans for the future.

*The Birmingham Dispensary.*

During 1906 this charity received £203 more than in the previous year from subscriptions and supernumerary tickets and the general expenditure decreased by £63, but the amount spent by the relief fund exceeded the income by £267. Nevertheless the revenue for the year was sufficiently good to enable the committee to place all the legacies received during the year in an investment deposit account and in addition it paid a further £300 into this account to reduce the deficiency caused by the withdrawal of £800 in 1904 to meet annual expenditure. It has been decided to establish a new branch at Smethwick which will cost over £6000, and for this purpose an appeal is made for donations, those associated with Smethwick being particularly called upon. No one can doubt the wisdom of the decision, for Smethwick is the centre of a large working population and it is to be hoped that the money needed will be forthcoming, so that the necessities of the district may be properly met.

March 6th.

## LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

*Liverpool Country Hospital for Chronic Diseases of Children.*

THE annual meeting of the subscribers to this hospital took place at the town-hall on March 1st, the Lord Mayor presiding. The report showed that the work of building the hospital at Heswall was now in a forward condition. When completed the hospital would accommodate 200 cots and would be as large as the David Lewis Northern Hospital or the Royal Southern Hospital. The administrative block was now in an advanced state and should be ready for occupation at the same time as the central block. The number of endowed cots and the maintenance fund at the disposal of the committee were matters for satisfaction. Two additional cots have been endowed by Miss Gaskell and Mr. Edmund Johnston, the former subscribing £600 and the latter £1000. For the past seven years the hospital had been treating children's chronic diseases in a small way at West Kirby. The committee reiterated its appeal for £15,000 which was made at the ceremony of laying the foundation-stone, feeling that this amount was urgently required to place the hospital on a proper footing. A Children's Country Hospital Guild, of which Lady Russell is the president, had been formed to assist in providing the necessary linen for the hospital and had been well supported. During the year 22 children had been discharged from the West Kirby hospital, two having been under treatment for over two years, four for a year and upwards, 12 had been in the hospital for from four to ten months, and four for lesser periods. When completed the hospital would be equal to the largest Liverpool hospital, while as regarded its position—in the way of fresh country—it would be unequalled.

*The Dutton Research Professorship.*

The research professorship which is in contemplation at the University of Liverpool in connexion with the School of Tropical Medicine, as a memorial to the late Dr. J. E. Dutton, is now in a fair way of becoming an accomplished fact. So far £4000 have been promised.

*Death of James Moore Bennett, M.D. St. And.*

Dr. J. M. Bennett (of Prince's-road), one of the oldest practitioners in the city, died suddenly at his residence on March 1st. He became a Member of the Royal College of Surgeons of England in 1856 and graduated as M.D. St. Andrews in 1862. He held several important medical appointments, being consulting physician to the Liverpool Dispensaries; one of the oldest of the many Liverpool charities. General regret was expressed at his sudden decease. He was about 73 years of age and leaves a widow and several children.

*Liverpool Stanley Hospital.*

Dr. John Owen, pathologist to the David Lewis Northern Hospital, has been elected an honorary physician to the Stanley Hospital, in the room of Dr. John Hay. Dr. Owen, who is M.B. of the University of London, served during the late Boer war as a civil surgeon in the South African field force. He also held some minor appointments in Liverpool.

March 5th.

## LEEDS.

(FROM OUR OWN CORRESPONDENT.)

*Hospital Sunday Collections.*

THOUGH the various charities of Leeds are well, and indeed generously, supported in many ways it has been pointed out that the growth of the Hospital Sunday collections has by no means kept pace with the increase of the population. The reason for this is not clear. It may be that the attendance at the various places of worship is less than it was or has not increased *pari passu* with the population, and there may be something in the criticism of those who think it inadvisable that Hospital Sunday should be held during Lent, for it is believed that many clergymen are unwilling to make a special appeal for the charities a feature of the services during that season. It is interesting to note that the returns up to the present date are almost identical for the years 1906 and 1907. The amount realised in 1906 from 233 church collections was £1293 19*s.* and this year the amount from the same number of collections differed by only 1*s.* 10*d.*, being £1293 17*s.* 2*d.* Last year a committee was appointed to report on the proportion in which the fund should be divided among the various charities and this year the division will be as follows: The General Infirmary will receive 70 per cent., the Public Dispensary 14 per cent., the Hospital for Women and Children 10 per cent., the District Nursing Association 5 per cent., and the new Leeds Maternity Hospital 1 per cent.

*The District Nursing Association.*

The twenty-eighth report of this valuable institution was presented at the annual meeting, which was held on Feb. 25th under the chairmanship of the Vicar of Leeds. The special feature of the work of this charity is the nursing of the necessitous poor at their own homes. It is a rule of the institution that every case which is being attended to must be under the care of a medical man. The report shows that 3491 cases were attended to during 1906, a number which, though slightly less than that for the previous year, really indicates an increased amount of work when the more severe nature of the cases is considered, as a larger percentage appears to have been of a kind involving surgical operations. The number of visits made was 81,727 as against 80,021 for 1905, figures which reflect favourably on the zeal of the staff. The undivided attention of one nurse is devoted to work in the out-patient department of the Public Dispensary and here no fewer than 19,137 patients have received attention from the nurse. The staff now consists of two superintendents and 22 nurses. Of these, 11 are at the central home, three in Hunslet, one at Kirkstall, five in Holbeck, and two at Armley. During the year just come to an end the branches at Holbeck and Hunslet have been moved to new and more suitable premises. There is no medical man in Leeds who has not a good word for the excellent work of this association. Many members of the working class are, in virtue of its existence, enabled to remain under the care of their own medical attendants who otherwise would have to be removed to the infirmary, or rather I should say that, having regard to the pressure already existing on the beds of that institution, extra infirmary accommodation would have to be secured in Leeds. The institution is one, therefore, which deserves support at the hands of all members of the public and one would wish to see its finances in a more flourishing condition. There are many districts of the city which are as yet untouched by the association and many in which it is most desirable that an extension of the work should be carried out. The expenditure for the year 1906 was £2407 and I am glad to see that the income exceeds this by about £95, so that the adverse balance of £159 due to the bank at the end of 1905 is somewhat reduced. The annual subscriptions amounted to £1293; the donations, which included those of £300 from the Trained Nurses' Institute and £225 from the Workpeople's Hospital Fund, amounted to £821; the interest from invested funds was £152. A sum of £125 was obtained from rents of property owned by the association and from the dispensary £110 were received in payment of the special services rendered by the nurse who devotes all her time to the work of that institution. An interesting feature of the annual meeting was an address by Miss Hughes, the general superintendent of the Queen Victoria's Jubilee Institute of Nurses, who urged on the association the advisability of undertaking the work of training probationers in the special work of district nursing. It is undoubtedly the case that nurses who have been trained even in the best of hospitals require some special experience and instruction in district nursing before they attain to their full degree of usefulness. As special features of such instruction Miss Hughes mentioned the elements of sanitary law, the relationship to the poor of boards of guardians, the differences between public dispensaries and provident dispensaries, and the elements of hygiene. The society of which she is the general superintendent is anxious that associations such as that of Leeds should take on as probationer nurses women who have already undergone a full period of hospital training as nurses, in order that by attending specially arranged courses of lectures and by practical experience they should become efficient district nurses. The Jubilee Institute was prepared to pay £28 for six months' training in the case of each nurse, it being understood that during the period of training the nurse should be lodged and boarded at the expense of the association and receive wages at the rate of not less than £25 per annum. On the completion of this term of training the nurse would have to hold herself at the disposal of the Jubilee Institute for a period of 12 months and be prepared to go to any part of the country where her services might be desired.

March 5th.

## WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

*Cardiff Infirmary.*

THE colliers in the districts adjoining Cardiff have always been generous supporters of the Cardiff Infirmary, but for some reason or other the working people in the town itself have never contributed as much as might be expected. At the annual meeting of the governors of the institution, held on Feb. 27th, the Lord Mayor attributed this neglect to the fact that the needs of the infirmary had never been sufficiently brought before the working classes of the town. He proposed that a penny fund should be established in connexion with the various works and industrial establishments, the proceeds to be divided between the infirmary and the Queen's Jubilee Nurses' Institute. The right to the services of a nurse from the institute or to a ticket of admission to the infirmary is to be held out as an inducement to subscribe to the fund. The annual report of the board of management of the infirmary states that in 1906 there were treated 2153 in-patients and 21,913 out-patients. Of the latter 4808 were minor casualties. Early last year an appeal was made for £7000 to remodel the out-patient department and by the end of November over £8000 were subscribed, including two donations of £1000 each. This ready response has no doubt encouraged the governors to put forward a scheme for the general enlargement of the infirmary. There are now 184 beds, part on the ground floor and part on the first floor. The smooth working of the institution appears to be very much handicapped from the absence of corridors connecting the wards on the upper floor and still more from the want of a lift between the two floors. The extension scheme includes the provision of corridors and lifts, a gynæcological operating theatre, a clinical laboratory, museum, and post-mortem room, and a pavilion with wards for 64 beds. It is also proposed to erect an isolation ward with six beds and additional bedrooms for nurses and servants. The estimated cost of these additions is £30,000. The trade of Cardiff is said to be in a more flourishing condition than it has ever been, so that there ought not to be any difficulty in raising this sum.

*Compensation for Confiscation of Diseased Meat.*

For several years past there has been an arrangement in many parts of South Wales under which there is refunded to the purchaser three-fourths of the price paid for cattle which within a reasonable time of the sale are found to be tuberculous and are condemned. A somewhat similar arrangement is in force in Newport. The scheme seems to have met with the approval of butchers and cattle dealers generally, for at a well-attended meeting of the National Federation of Meat Traders held at Cardiff on Feb. 27th, when the question was discussed, there appeared to be a general opinion that stock should only be purchased after a guarantee had been given that it was free from tubercle and that if confiscated the purchase price should be refunded.

*Cerebro-spinal Fever.*

Dr. E. Walford has advised the Cardiff corporation to add

cerebro-spinal fever to the schedule of diseases compulsorily notifiable under the provisions of the Infectious Disease (Notification) Act, 1889.

*Underfed School Children.*

A committee was formed in Cardiff last year for the purpose of providing dinners for children attending certain of the public elementary schools in the town. Since December, 1906, a charge of one halfpenny has been made for each dinner, except in certain cases where the teachers were allowed to remit this payment. During the past three months nearly 14,000 dinners have been provided. At a recent meeting of the committee it was decided to ask the city council as the education authority to adopt the Education (Provision of Meals) Act, at the same time suggesting that the authority should coöperate with the voluntary committee. There is no doubt that the committee has carried out its work exceedingly well and very economically.

*Common Lodging-houses in Monmouthshire.*

The development of the colliery districts in Monmouthshire, with the consequent rapid increase in population, has made it difficult for the local authorities to keep pace with the sanitary requirements. The bad housing conditions and other matters which are from time to time disclosed in official reports point only too clearly to the necessity for vigorous sanitary administration. Indifference on the part of the district councils is hardly, however, to be wondered at, for the county council in neglecting to appoint a medical officer of health and to establish a public health department has taken only the narrowest and most restricted view of its duties. These remarks are called forth by a recently issued report of the sanitary officials upon the condition of some of the registered common lodging-houses in Tredegar, an urban district with a population of about 20,000 persons. The lodging-houses inspected during two nights provided accommodation for 280 persons but there were actually found in them 447 and others were coming in at the time of the inspection. In one house there were 100 persons, although it was registered for only 30. The board of guardians shares the responsibility for this overcrowding, for 60 of the 100 lodgers were sent there and paid for by the board owing to the insufficiency of the accommodation for tramps at the workhouse which is situated in Tredegar. In another unregistered house there were crowded together men, women, and children without any attempt at partitioning off the beds. In a registered house 108 of the 120 beds were occupied, but in addition there were 40 men sleeping on the floor, benches, and tables in the kitchens. The medical officer of health (Mr. G. A. Brown) might well say in his report that the conditions in which many of these people were found to be sleeping were disgusting and disgraceful and conducive to immorality in its grossest and most shocking form.

*Royal West of England Sanatorium.*

The fine block of buildings belonging to the Royal West of England Sanatorium is well known to those who have visited Weston-super-Mare. It occupies a prominent position overlooking the Bristol Channel. The usefulness of the institution increases year by year. Last year 2695 patients were admitted and of this number only 156 were discharged without any improvement having taken place and three died. Unlike many similar institutions, the expenditure, £4500, was more than met by the income, £4509. The average cost of each patient was 33*s.*, and of this sum the patients themselves contributed on an average 7*s.*

*Falmouth Hospital.*

The annual meeting of the subscribers to the Falmouth Hospital was held on Feb. 25th. The medical report stated that during 1906 the in-patients admitted numbered 78, compared with 80 in 1905, and there were 395 out-patients treated, as against 380 in the previous year. The financial statement showed that the income amounted to £539 and that an unfavourable balance of £25 remained. The committee recommended the following addition to the rules of the institution:—

> Any patient in a position to do so shall pay in advance a weekly charge from two shillings and sixpence to twenty-five shillings, according to circumstances. The actual amount payable shall be fixed by the house committee or their delegates, and in addition such patients will be expected to pay their medical attendant.

The honorary medical staff opposed this innovation but after a considerable discussion the recommendation of the committee was carried by one vote.

*A Prosecution under the Infectious Diseases Act.*

At the Bristol police court on Feb. 25th a young woman was summoned for entering a cab whilst suffering from measles without previously notifying the fact to the driver, and her mother was charged with aiding her. The evidence showed that the younger defendant had intended to proceed from Bristol to Weymouth. The magistrates fined the mother 20*s.* and costs, and believing that the daughter acted upon the instructions of the mother directed her to come up for judgment when called upon.

March 5th.

## SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

*Edinburgh Royal Asylum for the Insane.*

AT the statutory annual meeting of this institution Dr. T. S. Clouston presented his annual report. The number of patients during the year had been slightly under the average of past years. Referring to general paralysis Dr. Clouston stated that there had been 55 admissions. The proportion of general paralysis to the admissions of private patients was 11·1 per cent. and to rate-paid patients 22·7 per cent. This meant that better-off people lived more cleanly. He stated that Dr. W. Ford Robertson, with Dr. G. D. McRae, their pathologist, had been working during the year at the elucidation of this terrible malady. They had made distinct progress towards a knowledge of its true nature, its definite diagnosis, and they thought of its treatment with a view to cure. The patients they had had under treatment had where the disease was in an early stage shown a wonderful improvement; but the first thing to be done was to be able to diagnose it definitely in the early stages so that treatment might be applied before the brain was seriously damaged. He considered that the success of Dr. Robertson and Dr. McRae's investigations would be such a triumph over difficulties and of such service to humanity as would mark an era in medical service. Alcohol, as usual, was the cause of a large number of admissions. Dr. Clouston drew attention to the fact that the institution reached its centenary this year, the Royal charter of incorporation bearing the date of May 2nd, 1807. During that period 20,680 patients had been treated and over £370,000 had been expended on the purchase of land and the erection of buildings. This year the institution entered upon a new phase, as the rate-paid patients were to go to Bangour Asylum. They would now be able to admit all patients sent to them at £32 10*s.* and £45 rates of board.

*Public Health Congresses.*

On the invitation of the public health committee of the Edinburgh town council a conference of delegates from different corporations was held in Edinburgh with a view to consider if steps could be taken for reducing the number of sanitary and public health congresses which take place annually in different parts of the country. Several resolutions on the subject were agreed to, one of which was to the effect that representations should be made to the Royal Sanitary Institute and the Royal Institute of Public Health urging them to hold a combined congress or to hold their respective congresses in alternate years. The delegates were entertained to luncheon by the corporation.

*Notification of Pulmonary Tuberculosis and Cerebro-spinal Fever in Edinburgh.*

Notice has been sent to the medical practitioners in Edinburgh that the magistrates and council, as the local authority of the city of Edinburgh, had on Jan. 17th, 1907, resolved that the Infectious Diseases (Notification) Act, 1889, shall apply within the city of Edinburgh to phthisis pulmonalis, in addition to the diseases specifically mentioned in the said Act; and that this resolution and order shall come into effect on March 1st, 1907. A printed slip accompanying this states that the public health committee expects that in all cases the diagnosis will be confirmed by bacteriological examination. At the same time, a second letter has been distributed intimating that the local authority, in view of an emergency caused by the prevalence in the city of cases of cerebro-spinal meningitis, has resolved and ordered that the same Act shall apply so as to include epidemic cerebro-spinal meningitis for a period of six months and that this resolution and order shall come into effect on March 9th, 1907. There is no suggestion in this case that the diagnosis should be confirmed by bacteriological examination.

*The Royal College of Physicians of Edinburgh.*

The Council of the Royal College of Physicians of Edinburgh has been fortunate enough to prevail on Professor J. Ritchie of Oxford to return to Edinburgh as superintendent of its laboratory.

*Dr. J. M. Beattie's Election to Sheffield.*

Dr. Beattie, who has been long connected with the pathological department in the University of Edinburgh and is lecturer on bacteriology in the University, has been appointed to the chair of pathology at Sheffield.

*Spitting on Tramcars.*

The Glasgow corporation has evidently determined to stamp out the practice of spitting on its tramcars and as a result ten prosecutions were heard last week at the police court. Two officials from the tramway department explained in court that six warning notices were displayed on each car, but despite these precautions the practice of spitting still went on. Three of the accused failed to appear and warrants were granted for their arrest. Six were fined half a crown and one case was dismissed.

*The Treatment of Incipient Mental Disorders.*

An interesting step was taken last week by the managers of the Western Infirmary, Glasgow, when they determined to undertake in the dispensary attached to the infirmary the treatment of cases of incipient mental disorder. The treatment of such cases as out-patients at a general hospital has already been carried out for some years at St. Thomas's Hospital, London, and at the Royal Hospital, Sheffield, and the results obtained have been encouraging. For some time the establishment of such a clinic at the Western Infirmary has been under consideration, but it is only now since the erection of the new dispensary buildings that the managers have seen their way to carry the scheme into effect. The advantages of a department of this nature attached to a general hospital are very obvious and in a teaching hospital the student should benefit very considerably. Hitherto he has received all his instruction in this subject of the curriculum in asylums, where he sees only those fully developed cases which he will so rarely be called upon to deal with in general practice. In the out-patient department he will see the malady in the same early stages in which it will often present itself to him in his actual work in which recognition is often very difficult and in which recognition is always of the utmost importance. To that portion of the community for which in a large city the out-patient department of a general hospital exists the establishment of such a clinic should prove a great advantage, because it enables the poorer classes to receive attention in the early stages of a mental malady when, as is well known, the disorder is very much more amenable to treatment than when it is fully established. In connexion with this also it is worth noting that when a patient has been seen by an expert the friends will be more likely to follow the advice to send him to an asylum early if necessary and thus to hasten recovery and to avoid the dangers which are often inseparable from a mental ailment. And last, but not least, to the medical practitioner it should prove a great help in dealing with those borderland cases which are often so troublesome and harassing where the medical attendant has to assume the whole responsibility on account of the patient's inability to pay the fee which would be required for consultation with an expert.

*Appointments at the Western Infirmary, Glasgow.*

The following appointments to the staff of the Western Infirmary have been made this week:—Dr. L. R. Oswald to the recently instituted department for the treatment of incipient mental disorders, and Dr. A. G. Hay and Dr. J. Goodwin Tomkinson as assistant physicians in the electrical department.

*Appointment for a Scottish Medical Officer of Health.*

The Royal Commission on the Poor-laws and Relief of Distress has determined to secure an authoritative investigation and report by a medical expert on the methods and results of the administration of medical relief by boards of guardians in England. As the results of this investigation may have a very important bearing upon the finding of the Commission special care has been taken that the medical man who undertakes this work should not only be of high standing in medical and administrative circles, but also should be absolutely impartial in the sense that he should be removed from any of the controversies which have arisen with regard to the efficiency of various forms of local government in England. In appointing Dr. J. C. McVail, the medical officer of the Stirling and Dumbarton county councils, the Commission has secured the person whom it needs. It is estimated that the necessary work will occupy a period of six months, and for this period the county councils have been asked to place his services at the disposal of the Commission.

*Ayr County Hospital.*

At the annual meeting of subscribers to the Ayr County Hospital the financial statement disclosed a somewhat serious state of matters. Three years ago, in view of the termination of agreement with the local sanitary authorities regarding fever cases, the directors anticipated a considerable diminution of revenue and appealed to the public for increased subscriptions, but the appeal met with no response. During the last three years the income has been insufficient to maintain the hospital by something like £700 per annum. Everything has been done to cope with the situation by cutting down expenditure so far as possible without interfering with the efficiency of the hospital, and now the directors have decided that unless during the next year they have an increase of income they will be compelled to reduce the number of beds from 60 to 40.

March 5th.

## IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

*Emigration from Ireland: Statistics for 1906.*

THE official returns of the Registrar-General of Ireland in reference to emigration during 1906 appeared in London on March 2nd. The emigrants who left Irish ports during last year numbered 35,918, or 8·2 per 1000 of the estimated population of Ireland in the middle of that year, showing an increase of 4746 as compared with the numbers in 1905. America was the destination of 76·6 per cent. of the total in 1906—so that the Irish peasantry, instead of being induced to stay at home by the promises of Mr. Bryce, have emigrated to the country to which he himself has gone. The race, however, is not likely to become extinct, for in the report of the Coombe Hospital which has appeared quite recently the master stated the fact that in connexion with the maternity department of the hospital 20 births had just taken place within a period of 12 hours, being a record.

*The Health of Belfast: the Commission of Inquiry.*

At a meeting of the city corporation held on March 1st the report as regards the health of the city, presented by the superintendent medical officer of health, showed that between Jan. 20th and Feb. 16th, 1907, 264 cases of zymotic disease were notified—30 cases of enteric fever, 66 of scarlet fever, 21 of simple continued fever, 4 of puerperal fever, 32 of diphtheria, 4 of membranous croup, 36 of erysipelas, and 71 of cerebro-spinal meningitis. The average annual death-rate has gone up to 24·8 (from all causes), that from zymotic disease being 0·9 and from chest affections 9·3 per 1000. The increase in the number of infectious diseases notified as compared with that of the previous month applies to all the notifiable diseases except scarlet fever and erysipelas. 71 cases of cerebro-spinal meningitis were notified during the four weeks, as compared with 24 in the previous five weeks, the deaths numbering 41. The superintendent medical officer of health thinks that the increase in the number of epidemic diseases is due to the prejudice which exists in the minds of a large number of the people of Belfast who object to send cases of infectious disease into hospital. As to the large increase in the enteric fever cases, he strongly recommends, following the lead of the city improvement committee of the corporation, that all back passages should be paved, drained, and completed without delay, a suggestion which was made so far back as 1896 by a special committee appointed by the corporation. Why were these recommendations not put in force? And why is there such an effort being made now to raise a loan in order to go to the length even of putting water-closets in the houses in the Belfast slums? The visit of the health commission is already producing its effect. The commission opens to-day (March 5th). Mr. T. Phelan, LL.D., will act as secretary. The terms of reference are to inquire into:—

1. The cause or causes of the high death-rate.
2. The administration by the several authorities charged therewith of all general Acts and Orders relating to the public health and the

prevention of disease and of all provisions of local Acts conversant with the same or similar matters, and of all other Acts or Orders, whether general or local, which directly or indirectly affect the public health of the city.

3. The measures recommended for adoption with a view to the improvement of the health of the city.

*The Belfast Maternity Hospital.*

At the annual meeting of the supporters of this hospital held on Feb. 28th it was reported that during 1906 there were treated in the hospital 373 patients with only one maternal death due to a patient exhausted on admission from placenta prævia.

*Cerebro-spinal Fever.*

Three additional cases of cerebro-spinal fever were reported in Belfast on March 4th and another death. The number of patients now in Purdysburn fever hospital is 36, while the death-rate stands at 79 out of a total of 137 cases. The various precautions taken by the health authorities have had no effect whatever in checking the disease nor unfortunately has the return of milder weather. Apparently the meningococci have at present in Belfast the ideal conditions for making them flourish and for making them infective.

March 5th.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*Amœbic Dysentery originating in Paris.*

AT a meeting of the Hospitals Medical Society held on Feb. 15th M. Caussade and M. Joltrain communicated an account of a most interesting case of amœbic dysentery accompanied by hepatic abscess, originating in Paris. The patient was a man who had never been in the colonies or in contact with anyone suffering from dysentery. In the month of December, 1905, he was attacked by diarrhœa consisting of mucous and bloody stools, and gradually he developed a hepatic abscess which was followed by a pulmonary vomica. Direct examination of the stools failed to reveal the presence of the amœba and no bacilli of dysentery could be cultivated. The diagnosis, however, was able to be made with practical certainty by the clinical picture and by the presence of a hepatic abscess which is an exceptional complication in ordinary bacillary dysentery. Moreover, the serum of the patient showed no agglutination with the bacilli of Shiga and Flexner and the blood showed eosinophilia, which hardly ever occurs except in amœbic dysentery, while, finally, amœbæ were found in the pus from the vomica. At the post-mortem examination a large hepatic abscess was found with a fistulous tract between the liver and the bronchi. There were numbers of deep ulcers with undermined edges in the large intestine and histological sections of these ulcers revealed the presence of numerous amœbæ. The history of this case shows the importance of making an accurate diagnosis by every means which modern clinical medicine furnishes and the necessity of early intervention in the case of hepatic abscess occurring in the course of an attack of amœbic dysentery.

*The Activity of Antirabic Serum.*

M. A. Marie read a paper at a meeting of the Biological Society held on Feb. 9th in which, after having recalled the fact that the serum of mammals which had been immunised against rabies by Pasteur's method acquired the power of neutralising an emulsion of rabic virus *in vitro*, he added that the preparation of such serums at the Pasteur Institute showed some peculiarities in regard to their activity. If, for instance, sheep which had been immunised by a weekly injection of a moderate fixed quantity of virus are taken the activity of their serum only varies within very small limits, and if serum be collected from them at different times it will be found to neutralise one, two, or three volumes of a one-hundredth dilution of virulent emulsion previously filtered. A serum incomparably more active can be obtained by increasing the virulent dose administered weekly to the sheep and by lessening the interval of time between the inoculations. Under such conditions it has been found possible to prepare serums of which one cubic centimetre can neutralise nearly 40 times its volume of virulent emulsion diluted to one-hundredth. Such sheep had received between 20 and 50 brains of rabbits suffering from rabies. The energy of this serum, which falls directly the injections are lessened in quantity and given at wider spaces of time, does not show the particular quality remarked upon by Neisser and Wechsberg for other serums. The most energetic of the antirabic serums has no neurotoxic power for the rabbit, and administered alone to an animal its only prophylactic effect is in retarding the evolution of rabies.

*Alternating Electric Currents corresponding to Musical Sounds.*

At a recent meeting of the Academy of Sciences M. Maurice Dupont said that he had been able to reproduce as an alternating current a series of vibrations which corresponded to a series of musical tones. The passage through the organism of these alternating currents which corresponded to certain musical tones produced the effect of hearing the tones themselves. So much was this the fact that M. Dupont thought that the process might be used for making deaf-mutes "hear." A study of the currents in question also made it conceivable that they might be so attuned to the nerve cells as to bring about excitation or the reverse, or phenomena of inhibition or anæsthesia. M. d'Arsonval recalled the fact that in 1885 he had demonstrated that when a muscle was excited by an alternating current coming through a microphone set in action by the human voice the muscle would reproduce the melody and even the words.

*The After Effects of Influenza.*

The influenza epidemic of this year cannot be compared in intensity with that of 1890, although it has been fairly acute and widespread. It will be interesting to see whether it will be followed by the same results as that of 1889–1890 which were noted by Dr. Bertillon. In September and October of the year 1890 the number of births in Paris fell considerably. The weekly figure which before and after the two months in question was from 1100 to 1200 fell during September and October to from 800 to 900.

March 4th.

## VIENNA.

(FROM OUR OWN CORRESPONDENT.)

*New Regulations for Recruiting.*

THE gradual lowering of the physique of numerous classes of the population, which has been ascribed partly to malnutrition and partly to the extension of manufacturing industries, has induced the army medical committee to relax the requirements which have hitherto governed the admission of recruits to the service. The minimum stature, which formerly was 160 centimetres and which 14 years ago was reduced to 155 centimetres (5 feet 1 inch), has now been fixed at 153 centimetres. Imperfections of the organs of the special senses do not play such an important part in disqualifying for the service as formerly. Thus, a visual acuity of $\frac{1}{12}$, with glasses of six dioptres, whether convex or concave, will in future not disqualify a man, whereas up to the present time a visual acuity of $\frac{1}{3}$, with glasses of four dioptres, was the utmost limit of defective eyesight permitted. A hearing power of three metres for the conversational voice in one ear with normal hearing in the other ear, or of six metres for both ears, will be considered sufficient. Perforation of the drum will no longer disqualify a recruit. All men suffering from the above-mentioned slight defects will be employed in the administrative departments, whilst those of normal physique will be set to purely military duty. The experiences of the Russo-Japanese war, in which attacks of insanity formed an alarming proportion among the causes of invaliding, has led to special attention being paid to neurasthenia and its proximate causes. The Austrian system of compulsory military service brings every man between 20 and 25 years of age before the recruiting officers and gives a good idea of the increase or otherwise of physical unfitness throughout the empire.

*New Life Insurance Tables.*

The Austrian life insurance companies, in union with several foreign companies doing business in Austria, have for the last 30 years been conducting investigations in regard to the expectation of life for three different groups of insured persons—namely, the married, the single, and the total abstainers. An aggregate of 618,445 persons constituted the material basis of the computations and of these 88,200 were women. Two distinct ways of calculating were adopted. In the first place each person insured was counted separately, no matter in how many companies the same person was insured, and in the second place each person insured in

several companies was counted only once. Between 1875 and 1901 every death was counted and then the respective items, "married," "single," and "abstainer," were taken into consideration. The occupation, the standard of living, and the place of abode were in all cases noted very carefully; and the tables compiled on this system, when compared with the Baumann-Süssmilch tables of expectation of life, showed that there was a difference between them, although only a slight one. But the most interesting feature was the fact that all the investigations proved that in the matter of vitality there was a superiority of the total abstainer over the occasional drinker and still more over the habitual consumer of alcohol. Indeed, the figures for the abstainers showed that they had an expectation of life greater than the others by 8 per cent. (five years). As regards the effects of marriage, it was found that single persons are not much worse off than the married ones. Another interesting fact was brought out by this collective investigation—namely, that the improvements in hygiene, the lowering of the death-rate, and the progress of medical science have not raised the expectation of life since the time, 50 years ago, when the above-mentioned tables were compiled.

*The Medical Profession in Austria.*

The Medical Register for 1907 contains particulars of 11,937 registered practitioners as compared with 11,764 in the preceding year. In Vienna alone there are now 2902 practitioners against 2813 last year, working out at 1 to 800 inhabitants, whilst the ratio for the empire is 1 to 2400 inhabitants. The lowest ratios are in Galicia, where the proportion is 1 to 4000, and in Dalmatia, where it is 1 in 4100. The average figures for the larger cities of the different countries are 1 practitioner to every 1200 or 1400 inhabitants, except in Prague and Graz, where the proportion is the same as in Vienna. The annual increase for the empire is 1·5 per cent., whilst the annual increase of the population is estimated at 5 per cent., so that in course of time a demand for practitioners, especially in the country, will be felt. But since the position of the profession as a whole is not at present very attractive better inducements will have to be held out to students if the supply is to be maintained. The annual increase of the number of practitioners used to be from 4 to 7 per cent. before 1895, but since that time it has fallen steadily, a fact proving that a medical career is not viewed with such favour as before. The conflicts between official bodies and the representatives of the profession and between the Diet and the medical councils show that a change has come about in the ideals of the medical man. If his rights are disregarded and if adequate remuneration for his work is not forthcoming the position of a medical man will be less coveted than formerly.

*A Rare Case of Stone in the Kidney.*

At a recent meeting of the Medical Society Dr. Franz showed two large renal calculi obtained at the post-mortem examination of a patient who had been under medical supervision for this disease for 28 years and had, when in his twenty-sixth year, been obliged to stay in bed for seven months. During this time to some extent, but in a greater degree at a later period, pains in the kidney came on now and then, and finally assumed the characters of well-defined renal colic. The patient would not submit to an operation and after 1896 the colicky pains vanished entirely, so that he was not seen by his medical adviser for four years. The urine was always turbid, contained sometimes pus and blood, and sometimes sand, but otherwise during the last nine years of his life he was perfectly well and free from any colic or pain. In 1905, whilst on board a ship, he suddenly fell ill, sank rapidly, and died with the symptoms of uræmia supervening upon an attack of renal colic. A necropsy was made and in the right kidney there was found a stone which exactly fitted the pelvis of the kidney and the calyces, and which is one of the finest specimens of its kind. The weight of the stone was three and a half ounces and it measured five inches by three inches by one and a half inches. A similar stone was found in the left kidney, weighing only one ounce. Both stones are hard, are coloured brown by admixture of hæmoglobin, as was discovered by spectrum analysis, and consist chiefly of phosphate of lime and magnesia. It is interesting to note that the patient suffered no inconvenience whatever during nearly ten years, although he had to be on horseback for several hours daily. The explanation offered for this unusual feature is that the size of the stones prevented their blocking the outflow of the urine because they could not be impacted in the ureters or compress all the pyramids of the kidney. One stone showed also that it came from a so-called double kidney—i.e., a kidney with two separate pelves. Thus it was possible that whilst one pelvis was hampered by the stone the other portion of the organ, leading a comparatively independent existence, could fulfil its function.

March 2nd.

## NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

*Employment of Child Labour.*

THE United States Census Bureau has issued a bulletin on the employment of children as bread-winners. A "bread-winner" is defined as one "earning money regularly by labor, contributing to family support, or appreciably assisting in mechanical or agricultural industry." It appears that the total number of bread-winners from ten to 15 years of age employed in the United States, according to the census of 1900, was 1,750,176. By far the most important occupation for children is that of agricultural labourers, the number so employed between the ages of ten and 15 years being 1,054,446. Next in importance comes domestic service, or the occupations of servants and waiters or waitresses, the number of these children being 126,617, of whom all but 17,059 were boys. Most of these children live in cities or urban communities. The cotton mills furnish employment to children to a greater extent than any other manufacturing or mechanical industry. Almost invariably the percentage of bread-winners in any community is much greater among the foreign-born children than among native children and somewhat greater among the native children whose parents were of foreign birth than among the children of native American parents. Statistics are given of the families of 23,657 bread-winners from ten to 14 years of age. Of this number 75·9 per cent. were living in homes with their parents; 14·3 per cent. were living with widowed mothers; and 2·4 per cent. with mothers living apart from their husbands. Though there are laws restricting child labour in most States they rarely apply to children over 14 years of age, and as a consequence by the time the children reach the age of 15 years 50·6 per cent., or one-half, of the boys and 21·4 per cent., or more than one-fifth, of the girls have become bread-winners.

*Higher Preliminary Standards of the Medical Department of the University of Pennsylvania.*

The requirements of this medical school for the session 1908–09 have been modified to include (1) two foreign languages, one of which must be French or German; (2) physics, based on at least one standard text-book and including laboratory work covering at least 35 exercises; (3) chemistry, with laboratory work in qualitative analysis, including two analyses of each group of metals and of acids, and of at least six mixtures containing metals and acids of the various groups; and (4) general biology or general zoology, based on a year's course of five hours per week or its equivalent. For the session of 1909–10 all students must have the equivalent of the freshman work in a recognised university, including the work above outlined, and for the session 1910–11, and thereafter, the equivalent of the freshman and sophomore work in a recognised university, including the work in physics, chemistry, biology, and languages. These requirements of all students entering the medical department of the University of Pennsylvania are the highest grade yet reached by any medical college in this country and give gratifying evidence of the determination of the oldest and most reputable college in the country to maintain an advanced position in the thorough education of its students.

*The Suppression of Unnecessary Noises.*

A large organisation of ladies and gentlemen was recently effected in New York for the purpose of suppressing unnecessary noises. The object is a most desirable one, as the people of this city are constantly subjected to an innumerable variety of ear-splitting noises, many of which are entirely unnecessary. The first act of the society was to suppress unnecessary noises in the vicinity of hospitals by notifying the officials of car lines that the ringing of bells and the blowing of

whistles must be discontinued in the neighbourhood of hospitals. The next step was to remove all cobble-stone pavements around hospitals. Then it was ordered that notices should be posted in different automobile clubs requesting the members to drive their cars at half speed and to refrain from the use of horns and siren whistles while passing hospitals. Already the influence of the society in the suppression of street noises is perceptible and great relief is anticipated from this source of disturbance of the sick.

*The Alcohol Question in the Navy.*

Medical Inspector Lovering, of the United States navy, reports that in the last three years there were 753 cases of alcoholism, or 251 a year, for an average force of 36 347 men; this is, nearly 7 per 1000 men (6·9). In the English navy in the last three years there were 251 admissions for alcoholism, an average of 84 a year in a force of 104,000 men. In the German navy there were 16 cases of admission for alcoholism in three and a half years, or less than five a year in a force of 31,000. These figures show that there are nearly ten times as many admissions for alcoholism in the United States navy as in the English navy and nearly 50 times as many as in the German navy. He adds that the admissions for alcoholism indicate only partially the amount of sickness due to drinking and very imperfectly the amount of drinking, as only those cases appear in the medical reports which require treatment for several days. Medical Inspector Lovering discusses at length the causes of the excess of alcoholism in the United States navy, as compared with the English and German navies, and is inclined to attribute it to the restrictions that are placed upon the United States sailors. He states that the grog ration was abolished by Act of Congress over 40 years ago and since that time the force of the United States navy has lived under laws of total prohibition which have been better enforced than such laws generally are, for there are no convenient drug stores where bitters, containing a large percentage of alcohol, can be obtained, nor fruit stands where "soft" drinks are sold. The remedial measures which he recommends are: (1) to reward the temperate by promotion and increase of pay and privileges; and (2) to allow, under proper restrictions and supervision, the sale of malt liquors and light wines at the canteens on board the ships and at the navy yards.

*Suppression of Yellow Fever in Cuba.*

When the United States took possession of the Government of Cuba recently the yellow fever, which had been stamped out during the previous occupation by the United States forces, had made its appearance in several localities. The reappearance of this disease, which has been the scourge of the island for a century, was due to a failure of the Cuban authorities to enforce the sanitary precautions adopted by the previous American health officials. On the re-occupation Surgeon Kean of the United States army, who so successfully stamped out the disease during the first occupation, was again placed in charge of the health department and again the island is free from yellow fever, no case having occurred since Jan. 7th. These facts strikingly illustrate the value of the rigid enforcement of proper preventive sanitary measures.

Feb. 26th.

ROYAL FREE HOSPITAL.—The Earl of Sandwich presided at the seventy-ninth annual court of governors of the Royal Free Hospital, London, held on Feb. 25th. He referred to the excellent work performed by the hospital during the past year. Owing to the falling off in the amount received from legacies during 1906 the financial position of the hospital had not been satisfactory, but a successful festival dinner presided over by H.R.H. the Duke of Connaught had enabled the committee to pay off the existing liabilities. The annual report showed that 2474 in-patients and 44,565 out-patients, casualties, and maternity cases had been under treatment during the year. The cost of maintaining the hospital during the year had been £15,864. Reference was made to the great need for increased financial assistance, the sure income of the hospital being only about one-third of the cost of maintenance. A new operating theatre and out-patient department were absolute necessities. A vote of thanks was passed expressing the thanks of the governors to Mr. Charles Burt for his many years' valuable service as treasurer of the hospital, from which position he was now retiring. A vote of thanks was also passed to H.H. Princess Louise Augusta of Schleswig-Holstein and the members of the ladies' association for their valuable services.

# Obituary.

## ALLAN MACFADYEN, M.D., B.SC. EDIN.

THE announcement of the death of Dr. Allan Macfadyen at the early age of 46 years will be received with very deep regret. By an accident which happened during the preparation of a serum for Malta fever he was infected with the disease, and though Malta fever is seldom fatal yet the infection found in Dr. Macfadyen's state of health, which had been undermined by anxieties and disappointments during the year, a too ready and sensitive soil to work upon. His death adds one more to that noble list of medical men who have lost their lives in the cause of science and in the striving after truth.

The younger son of Mr. Archibald Macfadyen of Glasgow, Allan Macfadyen was educated in Edinburgh and graduated M.D. in 1886 at the University. He took the B Sc. two years later. Then he studied abroad at Berne, Göttingen, and Munich, where he familiarised himself with laboratory methods and attained that profound knowledge of bacteriology in all its aspects which served him so well as a teacher and an investigator. He also acquired a very intimate knowledge of the German language. In 1889 he was elected Sanitary Research Scholar of the Grocers' Company and became professor of bacteriology at the College of State Medicine, Great Russell-street. He took an active part with Lord Lister, Sir Joseph Fayrer, Dr. Ruffer, and others in the inception and foundation of the Jenner Institute, which was formed to take the place of the College of State Medicine, and when Dr. Ruffer resigned control and direction of the new institute in Great Russell-street Dr. Macfadyen succeeded him. In this appointment he prepared the plans for the proposed new laboratories at Chelsea, and in order that they should be of the best and equipped in the most modern fashion he visited the laboratories on the continent, and as a result we have the splendid institute at Chelsea. These were in the days before Lord Iveagh by his magnificent gift placed the institute on its present basis. Dr. Macfadyen organised everything and when the laboratories were completed he became the head. Under his administration a policy was pursued which in the opinion of many was right, as it would have ultimately placed the institute more on the basis of the hygienic institutes of the continent and no one denies that their analogue is much needed in the interests of preventive medicine in this country.

It is not, however, as an organiser of the Jenner (now the Lister) Institute that Dr. Macfadyen will be best remembered, but by his experimental work on the intracellular toxins of bacteria with which his name is so intimately associated. His many valuable papers to the Royal Society and scientific journals, English and German, testify to his activity in the investigation of important matters relating to preventive medicine. They run over a wide range of subjects but by far the most important, as they will probably be the most enduring, are his studies on the intracellular toxins. After resigning his position at the Lister Institute, where his persistence in this line of research was, we must suppose, unappreciated, although it had the support of Lord Lister, he pursued his investigations at King's College and at the Wellcome Laboratory. Concerning his work here a friend writes: "Macfadyen's view was that serum therapeutics had reached an *impasse*, owing to the great difficulty of producing efficient antibodies for intracellular toxins, and he made a profound study of the delicate and volatile nature of the most active toxins and the destructive effect of heat and other agents upon most of them. He had prepared from the endotoxins of the bacilli of typhoid fever, cholera, pneumonia, and other diseases serums of higher antitoxic power than has ever been obtained before. At the time when he became ill he had succeeded in his anticipation with the plague endotoxin and was working also at Malta fever. He expected to have brought to completion in the course of three or four months a research which had engaged his attention for years and which would have brought the sera into use. His anti-typhoid serum had already been begun to be employed in some of the London hospitals. But, alas, it was not given to him to finish his work."

Dr. Macfadyen was of a naturally reserved and shy disposition and few except his intimate friends were aware of the fine character and the genial and gentle nature which he

possessed. He was ever ready to think of others before himself and it was his extreme modesty which prevented him from coming more to the front. He married Miss Marie Cartleng, the daughter of Professor Cartleng, director of the Botanical Gardens at Dettingen. His death will come as a shock to his many friends here and abroad and the deepest sympathy will be felt for his widow in her great sorrow and sad bereavement.

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FREDERIC HENRY COLLINS, M.D. R.U.I., M.CH. & L.M., L.R.C.S. IREL.

MANCHESTER has lost a well-known and respected practitioner by the death of Dr. F. H. Collins. He had long been resident in Manchester, where his first appointment was the house surgeonship of the Hulme Dispensary. This led to his afterwards living for many years in the Hulme district, but about ten years ago he removed to Didsbury. As a student he gained the Hudson prize at Meath Hospital, Dublin, and was for some time the resident there. He will be much missed by friends and patients, to whom his kindness and courtesy and his devotion to their interests endeared him in no common degree. Dr Collins was for a long time the moving spirit in the "Healthy Homes" lectures at the Hulme town hall. As a large proportion of mothers are ignorant and many are careless as to the hygienic management of their dwellings and their children, so that an abnormal death-rate is of constant recurrence, such efforts as those of Dr. Collins are greatly needed. Quite recently his sympathies and ideas of what was right and just were much exercised over the case of Mr. S. Bagley who was charged with obstructing the police who insisted on taking a patient to the hospital.[1] For the last year or two he worked ardently for the establishment of a Medical Benevolent Fund for the widows and children of medical men and only about three weeks ago the Manchester South division of the local branch of the British Medical Association resolved to recommend a joint meeting of the Manchester and Salford divisions to discuss the propositions which he was to bring forward. He died at the comparatively early age of 52 years after an illness of about ten days of pneumonia followed by heart failure. He leaves a widow and two sons. The funeral took place at the Manchester Crematorium on Feb. 20th and the building was crowded with social and medical friends. The great number of the latter testified more strongly indeed than anything else could have done to the regard and respect that Dr. Collins had gained from his own profession.

# Medical News.

ROYAL INSTITUTION. — On Thursday next, March 14th, at 3 P.M., Dr. C. W. Saleeby will begin a course of two lectures at the Royal Institution on Biology and Progress. The Friday evening discourse on March 15th will be delivered by Professor Lunge on Problems of Applied Chemistry and on March 22nd by Professor J. J. Thomson on Rays of Positive Electricity.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held on Feb. 28th at Caxton House, Westminster, Dr. F. H. Champneys being in the chair. A letter was received from Mr. H. Larder, medical superintendent of the Whitechapel union infirmary, renewing the application of the guardians for the approval of the infirmary as a training school. The Board resolved :—

That the resolution of the Board of Feb. 22nd, 1906, refusing the application of the Whitechapel Infirmary for approval as an institution for the training of midwives, on the ground that the maternity department was structurally unfit for the purposes of a training school, be rescinded, and that approval be now given.

The Board discussed certain points upon which amendment of the Midwives Act, 1902, was important and resolved :—

That a subcommittee be appointed to consider the matter, with a view to laying before the Privy Council a statement of necessary amendments of the Act, and a request that they may be embodied in a Government Bill to be introduced in Parliament during the coming session.

A letter was read from Dr. James Wheatley, county medical officer of Salop, as to the necessity of workhouse nurses holding the Board's certificate, and a letter was also read from Dr. James Niven, medical officer of health of Manchester, as to notification of intention to practise by a midwife in the Chorlton union hospital. The Board directed that Dr. Wheatley and Dr. Niven should be informed that the position of midwives in Poor-law institutions was at present under consideration by the Privy Council and the Local Government Board. Suggestions for amendments of the revised rules from the county medical officer of Lancashire, the local supervising authority for Manchester, and the county medical officer of London were considered and the Board decided :—

(1) That Rule E. 5 be amended by the omission in lines 10 and 11 of the words "and then exposed freely to the open air for several days." (2) That Rule E 16 be amended by transposing the last paragraph so as to make it the second. (3) That Rule E. 21 (c) be amended by requiring the following particulars to be inserted in the notification of stillbirth: Full term or premature number of months). Condition of child (whether macerated or not). Presentation.

A letter was received from the clerk of the Privy Council transmitting an Order in Council extending the period for which the present Rules of the Board are in force to March 31st, 1907.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A well-attended quarterly meeting of this association was held on Feb. 22nd, by the courtesy of the medical superintendent, Dr. A. M. Jackson, at the Notts County Asylum, Radcliffe-on-Trent, under the presidency of Dr. Robert Jones. Prior to the general meeting there were meetings of the council and of the Parliamentary and educational committees. Sample complete sets of "expansion forms" and "compilation forms," which have been prepared in connexion with the recently adopted statistical tables of the association, were on view and were briefly explained by the general secretary. A very instructive and suggestive paper, entitled "The Experimental Production of Spinal and Cranial Nerve Lesions by Toxins" and illustrated by microscopical preparations and lantern slides, was communicated jointly by Dr. David Orr, pathologist to the Prestwich Asylum, and Dr. R. G. Rows, pathologist to the Lancaster Asylum. It was discussed by the President and others and will appear in the *Journal of Mental Science*. In the evening the members dined together at the George Hotel, Nottingham, and entertained several of the leading local members of the medical profession. The annual meeting was fixed to take place in London on July 25th and 26th and the date of the next quarterly meeting was changed to May 16th.

ASSOCIATION OF SCOTTISH MEDICAL DIPLOMATES.—The annual dinner of this association was held on March 1st in the Oak Room of the Trocadéro Restaurant, Piccadilly Circus, London. The chair was taken by the President of the Association, Mr. Claude St. Aubyn-Farrer, who, in replying to the toast of "The Association," said that the members now numbered over 300 and that the association was making very satisfactory progress towards becoming an important and recognised force in the world of medicine. The council of the Royal College of Surgeons of Edinburgh had been petitioned to institute a Membership qualification, either in addition to, or in place of, the existing Licentiate's diploma, and though that council had found it impossible to take that step in the present circumstances the question would still be kept in mind. Amongst other subjects engaging the attention of the council of the association were the right of Scottish diplomates to use the title of doctor, the advisability of the institution by the Scottish Colleges of a special qualification in midwifery comparable to that granted by the Irish Colleges, and the position of Scottish diplomates in regard to appointments under the Poor-law. Other speakers at the dinner were Mr. J. G. Fitzgerald, Mr. Sydney Stephenson, Dr. C. O. Hawthorne, Sir Anderson Critchett, Dr. R. U. Moffat, Mr. A. H. Wake, Mr. H. R. Heather Bigg, and Dr. H. W. Fitzgerald Powell. The honorary secretary, Dr. E. N. Féré, was unfortunately unable to be present.

BATH EYE INFIRMARY.—The Bath Eye Infirmary has recently received a legacy amounting to £12,800 under the will of the late Mr. Isaac Williams of Bath. This munificent bequest comes at an opportune time. Founded in 1811 the infirmary is one of the oldest ophthalmic hospitals in the country. For many years it had a hard struggle for existence and it is only in recent times that it has taken an important position. The area which it serves is an extremely large one; in fact, there is no special eye hospital between it and London. With a limited income of

[1] THE LANCET, March 2nd, 1907, p. 607.

about £500 17 beds have been maintained for many years in a high state of efficiency and somewhere between 2000 and 3000 new patients attend annually. That this work is carried on year after year without running into debt reflects great credit on the committee of management, of which Sir John Dickson-Poynder is chairman.

DEATH OF A CENTENARIAN.—Mrs. Ann Marshall of Liskeard, Cornwall, who died on Feb. 25th, had celebrated the 103rd anniversary of her birthday on Feb. 12th.

Mr. Digby Cotes-Preedy, M.A. Camb., L.S.A. Lond., barrister-at-law of the Inner Temple and Oxford Circuit, has been elected a Member of the Society of Apothecaries.

UNIVERSITY OF SHEFFIELD.—Dr. James Martin Beattie, senior assistant to the professor of pathology, University of Edinburgh, has been elected by the council to the chair of pathology in the place of Dr. L. Cobbett. Dr. Cobbett has resigned the chair on his appointment as lecturer on bacteriology at Cambridge.

DONATIONS AND BEQUESTS.—Lady Wimborne has contributed a sum of £862 to the funds of the Cornelia Hospital, Poole, with the object of discharging existing deficits.—The treasurers of the Royal National Orthopædic Hospital have received a legacy of £500, duty free, under the will of the late Mr. S. W. Fryett.—Mr. Joseph Smith of Colwyn, North Wales, has given £1000 to the Oldham Infirmary for the endowment of a bed in memory of his father.—The late Mr. Charles James Oldham, F.R.C.S. Eng., of Hove, Brighton, has, amongst several large bequests for educational purposes, left £5000 to Epsom College and £1000 to Guy's Hospital.

SPRAYING SEWAGE INTO THE ATMOSPHERE.—Mr. W. D. Scott-Moncrieff, speaking before the Royal Sanitary Institute on March 2nd in the Parkes Museum, Margaret-street, London, declared that he had never lost an opportunity of stating the very grave objections which existed, on sanitary grounds and from the point of view of the public health, to the use of appliances which spray sewage into the atmosphere. It had been adopted at Staines because there was practically no alternative, seeing that the existing beds for the bacterial treatment of sewage had to be utilised, and in this case at Staines there were no houses in the immediate vicinity; but where large installations existed in the neighbourhood of towns Mr. Scott-Moncrieff was convinced that they would some day be identified as the immediate cause of most serious outbreaks of zymotic disease and he foretold that before long such installations would be absolutely prohibited. Mr. Scott-Moncrieff was most emphatic in his statement of the conditions which he described and pointed out how extraordinary it was that the general community which had been educated for years to believe sewer gases to be dangerous to health, should remain willing to accept the contradiction that the spray which is blown from these distributors in high winds and which contains pathogenic germs can be breathed with impunity.

QUEEN CHARLOTTE'S HOSPITAL, LONDON.—The annual meeting of governors and subscribers was held on Feb. 25th, Sir Samuel Scott, Bart., M.P., presiding. The report stated that 1704 patients had been received into the hospital during the past year and 1886 had been attended and nursed in their own homes. To the Convalescent Home 138 patients had been admitted. The ordinary expenditure had amounted to £6331, while the ordinary income was £5365, including grants of £500 from King Edward's Hospital Fund, £468 from the Hospital Sunday Fund, and £144 from the Hospital Saturday Fund. The arrangements for the enlargement of the Nurses' Home were progressing satisfactorily and it was hoped to commence building in the spring. Mr. and Mrs. Bischoffsheim had given a munificent donation of £2500 towards the cost of this enlargement but upwards of £6000 were still required. A large number of midwives and monthly nurses had been trained during the year and 107 had passed the examination of the Central Midwives Board. In addition 24 students and 35 qualfied practitioners had attended the practice of the hospital. The continued increase in the number of patients, and, as a consequence, in the number of nurses, necessitated the enlargement of the Nurses' Home. The committee was most anxious to carry out this work without trenching on the small amount of capital which the hospital possessed and he therefore made a very earnest appeal for the amount required to accomplish this object. The chairman also referred to the fact that Queen Charlotte's is the only lying-in hospital in London which admits medical students to its practice.

UNIVERSITY COLLEGE MEDICAL SOCIETY.—The next meeting of the University College Medical Society will take place on Wednesday, March 13th, in the Medical Library, University College, when a paper will be read by Sir Felix Semon, entitled "The Relation of Laryngology and Rhinology to General Practice." The chair will be taken at 8.30 P.M. by Professor J. Rose Bradford. Visitors are invited to attend.

LONG SERVICE OF A POOR-LAW MEDICAL OFFICER.—At a meeting of the Honiton (Devon) board of guardians held on Feb. 23rd Dr. Thomas Henry Stocker Pullin, who has been district medical officer for over 50 years, resigned his appointment. The chairman spoke in warm appreciation of the services of Dr. Pullin and the guardians, in accepting the resignation with regret, passed a unanimous vote acknowledging the good work which Dr. Pullin had performed.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*The Milkshops Order of 1885.*

ON the motion of Dr. RUTHERFORD a return has been ordered showing the names of the councils of boroughs and urban and rural districts which have made regulations under the Dairies, Cowsheds, and Milkshops Order of 1885. The number of councils in each class who have not made any such regulations will also be given in the return.

*Poisons and Pharmacy Bill.*

The Poisons and Pharmacy Bill, which has been introduced by Mr. HERBERT SAMUEL, Under Secretary of State for the Home Department, has been printed. It is backed by the Home Secretary and is designed "to regulate the sale of certain poisonous substances and to amend the Pharmacy Acts." A memorandum to the Bill explains in some degree the scope of the measure, which makes certain slight amendments in the schedule of poisons, recommends that other persons than chemists should be empowered to sell poisonous substances used in agriculture (sheep-dips and weed-killers), and requires that where a registered chemist carries on his business in more than one shop he should have a duly qualified manager in every shop where the chemist does not himself superintend the business.[1]

Mr. HERBERT SAMUEL, after the second reading of the Poisons and Pharmacy Bill, will move for the appointment of a Select Committee of the House of Commons to take expert evidence on various points dealt with in the measure.

*The Pharmacy Bill.*

Three Members, Mr. CROSS, Mr. BARKER, and Mr. DUCKWORTH, have placed on the order paper notices of motions for the rejection of the Pharmacy Bill.

*Medical Inspection of School Children.*

The Education (Administrative Provisions) Bill which has been brought into the House of Commons by Mr. MCKENNA, the new Minister for Education, contains a clause requiring local education authorities to provide for the medical inspection of children before or at the time of their admission to a public elementary school or on such other occasions as the Board of Education may direct. These authorities are also invested by the clause with the power of making such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children educated in public elementary schools.

## HOUSE OF COMMONS.

WEDNESDAY, FEB. 27TH.

*Cerebro-spinal Fever in London.*

Answering Mr. ASHLEY, Mr. JOHN BURNS said: The disease is not at present compulsorily notifiable in London, but I have made inquiry and have only heard of three cases having occurred in London during the present month. Two of them proved fatal. I may add that the County Council has taken steps during the past five days to make it a notifiable disease.

Mr. ASHLEY: After what period?—Mr. JOHN BURNS: The notification comes into operation at the expiration of three days.

*Medical Relief for Infants.*

Mr. MORRELL asked the President of the Local Government Board whether his attention had been called to the statement recently made by Dr. G. Danford Thomas to the effect that much of the infant mortality was due to the failure to call in medical advice early enough, whether he would issue a circular to boards of guardians advising them

[1] The Bill is discussed in a leading article in our present issue, p. 669.

to facilitate the calling in of the Poor-law medical officer by poor people who could not pay a medical man themselves, and further advising those boards of guardians which had a rule or practice making the cost of all medical relief a debt in the first instance, and those boards of guardians which required a father (or, if he was dead, the mother) of an infant who was receiving medical relief to appear before the board, to abolish such rule or practice in the case of infants under one year of age.—Mr. JOHN BURNS replied (by written answer) that it did not at present appear to him to be necessary to send the circular suggested.

THURSDAY, FEB. 28TH.

*Medical Examination of School Children.*

Mr. WEDGWOOD asked the President of the Board of Education, in view of the fact that medical officers of health were unanimously of opinion that if the medical inspection of school children was to be effective, particularly in preventing skin diseases, and so enabling middle-class parents to send their children to the provided schools, that power should be given to the local authorities to pass by-laws compelling the attendance of parents at these examinations, whether he would in the proposed Bill provide for such power being given.—Mr. JOHN BURNS answered: Without expressing any opinion on the intrinsic merits I think it is extremely important that every possible chance of smooth working should at the outset be given to the system of medical inspection and that no conditions should be attached which would increase the existing difficulties or tend to excite objections from parents or others.

*The Vaccination Order.*

In answer to Mr. SUMMERBELL Mr. JOHN BURNS said: The vaccination order promised on the 14th inst. is in an advanced state of preparation and will be issued as soon as practicable. I shall take care that there shall be a suitable interval between the date of its issue and that on which it comes into operation.

FRIDAY, MARCH 1ST.

*Education (Provision of Meals) (Scotland) Bill.*

Mr. J. RAMSAY MACDONALD moved the second reading of the Education (Provision of Meals) (Scotland) Bill. He said that last session the House of Commons decided in favour of the principle that public authorities should assist in feeding school children. The Bill embodying that principle and including Scotland within its scope was sent to the House of Lords, but there Scotland was excluded from the operation of the Bill. The object of the present Bill was to extend the principle of the English measure to Scotland, and to enable school boards in that country to provide meals for necessitous school children. The honourable Member argued that the various inquiries which had been made into the physical condition of children attending school in large towns in Scotland had brought out the need for this measure. The Royal College of Physicians, Edinburgh, had also sent a memorial to the Secretary for Scotland praying that power might be given to school boards to secure suitable feeding for the poorer class of school children, who could not otherwise secure the essential basis of all education.

Sir HENRY CRAIK moved the rejection of the Bill. He said that children's lack of food was one of the smallest difficulties that they had to face. Overcrowding and the neglect of sanitary precautions were far greater evils and these affected children long before they went to school. Neglect, too, had far more to do with the miserable condition of many poor children than mere lack of food. Already in every large town in Scotland there were charitable agencies which amply provided for their needs. The Bill would check the flow of charity.

Mr. HAROLD COX seconded the motion for the rejection of the Bill.

Dr. MACNAMARA, in supporting the Bill, pointed out that some most weighty evidence had been given before the Royal Commission on Physical Training in Scotland which went to show that a number of children there were in a half-starved condition.

After further debate,

Mr. SINCLAIR (Secretary for Scotland) said that he believed there was a vast mass of opinion in support of the Bill in Scotland. The Government would support the Bill in principle, although they might have many amendments in detail to propose. The Government Bill which he had announced to deal with various educational matters in Scotland would not conflict with the proposals in the Bill before the House but would be supplementary to it.

Mr. COCHRANE regretted that the Bill did not extend to the medical inspection of children. He attributed enormous importance to that and he hoped that honourable Members when they dealt with England on this question would not oppose any legislation enabling Scotland to benefit from such a measure.

On a division the second reading was carried by 227 to 52 votes.

It was agreed by 231 to 52 votes to send the Bill to the Standing Committee on Law for consideration.

*Medical Inspection of School Children.*

Mr. WALTER REA then moved the second reading of the Education Acts Amendment Bill. He explained that the measure consisted of two clauses taken from the Education Bill of last year. These were absolutely non-contentious. One permitted school authorities to provide play centres. The second clause, which was the more important of the two, enabled the central education authority to compel local education authorities to provide for the medical inspection of children attending elementary schools. The Bill did not refer to Scotland.

Mr. LOUGH, Parliamentary Secretary to the Board of Education, stated that the Bill would receive the benevolent support of the Government. The clause dealing with medical inspection was warmly supported last year also by the leader of the Opposition. However, he should mention that both clauses of the Bill were included in the measure dealing with non-controversial points in educational administration which the Government was promoting. That was no reason why the Government should not support the second reading of his honourable friend's Bill.

Mr. BALFOUR intimated that he did not intend to resist the second reading. He last year supported the provisions now set forth in this Bill and would do so again. He, however, hoped that the Government Bill would show that the enormous burden already thrown by primary education upon the shoulders of the ratepayers would not be augmented by a measure the general provisions of which they all desired to see carried.

The motion for the second reading of the Bill was then agreed to and the Bill has since been committed to the Standing Committee on Trade, &c.

MONDAY, MARCH 4TH.

*White Phosphorus in Matches.*

In answer to Mr. ARTHUR HENDERSON, Mr. GLADSTONE said: The manufacture of matches with white phosphorus is already under a set of special rules. A recent report upon the question has been laid upon the table and will be issued in a few days. Further action is under consideration, but I am not yet in a position to say exactly the steps I shall take in this matter.

*Medical Officers in Crofting Counties.*

Mr. CATHCART WASON asked the Secretary for Scotland whether the fixed salary given to a medical officer under the Poor-law in crofting counties was solely for medical attendance on the paupers, or was part of it for that purpose and the rest as payment for any other duties in the parish.—Mr. SINCLAIR replied: The answer to the first part of the honourable Member's question is Yes. The salary in so far as it has to be approved by the Local Government Board for the purposes of the grant is solely for medical attendance on the paupers.

TUESDAY, MARCH 5TH.

*London Sanitation.*

Mr. MORTON asked the President of the Local Government Board whether he was aware that the Port of London sanitary authority recently caused samples of Thames water to be taken at various points from Teddington to the Nore, and analysed for the purpose of ascertaining the degree of pollution of the river within the authority's jurisdiction; and that the result of such analysis showed that at Greenhithe there was a great increase in pollution (as compared with the water above that point), due to the discharge of some 250,000,000 gallons of sewage effluent per day at Barking and Crossness outfall sewers; whether he had any official information showing that the best and latest methods of purification were adopted; and, if not, what steps he proposed should be taken to insure this being done.—Mr. JOHN BURNS said in reply: I have seen a report of the Port of London sanitary committee as to the matters referred to in the earlier part of the question. The London County Council has for many years chemically treated the sewage of London, and I am informed that it is now engaged upon experiments on the most modern scientific lines, including improved purification by bacterial methods.

WEDNESDAY, MARCH 6TH.

*Milk and Tuberculosis.*

Mr. H. H. MARKS asked the President of the Local Government Board whether, under the regulations of the Local Government Board, the owner of a cow certified by veterinary surgeons to be suffering from tuberculosis was entitled to sell the milk of such cow for human food, so long as the disease had not attacked the udder of the cow; whether the owner who was prohibited from offering for sale the milk of the cow, by reason that the animal was certified by veterinary surgeons to be suffering from tuberculous disease of the udder, was entitled, under the regulations of the Board, to offer the animal for sale as a milch cow or for slaughter for human food; and whether in England, where a cow was found to be suffering from tuberculous disease of the udder, there was any obligation under the regulations of the Board, either on the owner who had been in the habit of selling the milk of such cow or on the veterinary surgeon who had certified it to be suffering from tuberculous disease, to make any notification of the occurrence of the disease to any public authority.—Mr. JOHN BURNS replied: The Dairies, Cowsheds, and Milkshops Orders of 1885 and 1899 prohibit the sale of the milk of a cow suffering from tuberculous disease of the udder, but the prohibition does not extend to the milk of a cow otherwise affected by tuberculosis. These Orders deal with dairies, cowsheds, and milkshops, and do not relate to such matters as those referred to in the second part of the question. Nor do they require notification in cases of the kind mentioned in the last part of the question. Where, however, there is in force a local Act containing what are known as the milk or tuberculosis clauses, a dairyman who supplies milk within the district and who has in his dairy a cow affected with tuberculosis of the udder must give notice of the fact to the medical officer of health of the district.

# Appointments.

***Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.***

AITKEN, D. MACCRAE, M.B., F.R.C.S.Edin., has been appointed Medical Superintendent at the Bolingbroke Hospital, S.W.

BEATTIE, JAMES MARTIN, M.D., C.M.Edin., has been appointed to the Chair of Pathology in the University of Sheffield.

BENNETT, H. G., M.R.C.S., L.R.C.P.Lond., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

BRISTOW, W. R., M.R.C.S., L.R.C.P.Lond., has been appointed to the Throat Department at St. Thomas's Hospital.

BURGESS, A. S., M.R.C.S., L.R.C.P.Lond., has been appointed Junior Ophthalmic House Surgeon at St. Thomas's Hospital.

BUTLER, G. G., M.R.C.S., L.R.C.P.Lond., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

CARLETON, H. H., M.B., B.Ch. Oxon., has been appointed to the Children's Surgical Department at St. Thomas's Hospital.

CASSIDY, M. A., M.B., B.C. Cantab., has been appointed Resident House Physician at St. Thomas's Hospital.

CHRISTOPHERSON, J. B., M.D. Cantab., M.R.C.P.Lond., F.R.C.S.Eng., Senior Medical Inspector, Soudan Government, has been appointed Director of the Soudan Medical Department.

CLARK, R. L., M.B., M.S.Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Maryport District of the county of Cumberland.

COBBETT, LOUIS, M.D. Cantab., F.R.C.S. Eng., has been appointed Lecturer on Bacteriology at the University of Cambridge.

COLCLOUGH, W. FRANK, M.D. Cantab., D.P.H., has been appointed Honorary Medical Officer to the Victoria Cottage Hospital, Sidmouth, Devon.

DREW, J. H., M.B., B.S. Lond., has been appointed Senior Casualty Officer to St. Thomas's Hospital.

DUNKLEY, E. V., M.B., B.S. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

EASTES, THOMAS, M.D. Lond., F.R.C.S. Eng., has been appointed Honorary Consulting Surgeon to the Victoria Hospital, Folkestone.

FELL, R. W., M.B., M.S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Buntingford District of the county of Hertford.

FIRTH, A. C. D., M.R.C.S., L.R.C.P. Lond., has been appointed Junior Obstetric House Physician at St. Thomas's Hospital.

GAMLEN, R. L., M.R.C.S., L.R.C.P., has been appointed Resident House Surgeon at St. Thomas's Hospital.

GARDEN, W. SIM, M.B., B.Ch. Aberd., has been appointed Second Assistant Medical Officer at Menston Asylum, near Leeds.

GRIMWADE, S. W., M.R.C.S., L.R.C.P. Lond., has been appointed to the Children's Surgical Department at St. Thomas's Hospital.

HARRISON, A. T., L.S.A., has been appointed Medical Officer of Health to the Durham Rural District Council.

HICKS, CHARLES E., M.R.C.S., L.R.C.P. Lond., has been appointed Surgeon to the Huntingdon County Hospital.

HOWITT, A. B., M.B., B.C. Cantab., has been [appointed Junior Casualty Officer to St. Thomas's Hospital.

HUGGINS, G. M., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

HUGHES, GERALD S., M.B., B.S. Lond., F.R.C.S. Eng., has been appointed Registrar at the Bolingbroke Hospital, S.W.

ILES, A. J. H., M.R.C.S., L.R.C.P. Lond., has been appointed to the Electrical and X Ray Department at St. Thomas's Hospital.

LACEY, HUGH KIRBELL, L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Physician to the Rosehill Children's Hospital, Torquay.

MACDONALD, S. G., M.B., B.C. Cantab. has been appointed Resident House Surgeon at St. Thomas's Hospital.

NEILD, F. M., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

NIGHTINGALE, H. J., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

PAGE, C. M., M.B., B.S. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

PHILPOT, H. A., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

POLLOCK, W. B. INGLIS, M.D. Glasg., has been appointed Consulting Ophthalmic Surgeon to the Ayr County Hospital.

READ, H. W., M.R.C.S., L.R.C.P. Lond., has been appointed to the Dental Department at St. Thomas's Hospital.

RUSHTON, CHARLES CHAPMAN, M.B., B.S. Lond., L.S.A., has been appointed District Medical Officer and Public Vaccinator of the Macclesfield Union.

SANKEY, W. O., M.B., B.S. Lond., has been appointed Resident House Physician at St. Thomas's Hospital.

STANLEY, DOUGLAS, M.D. Edin., M.D. Birm., M.R.C.P. Lond., has been appointed Honorary Physician to the Queen's Hospital, Birmingham.

STOCKS, R. W., M.R.C.S., L.R.C.P. Lond., has been appointed to the Skin Department and Ear Department at St. Thomas's Hospital.

SUMB, A. C. H., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Obstetric House Physician at St. Thomas's Hospital.

SUTTON, W. H. R., B.C. Cantab., has been appointed to the Skin Department and Ear Department at St. Thomas's Hospital.

UNWIN, H. R., M.B., B.C. Cantab., has been appointed House Surgeon to Out-patients at St. Thomas's Hospital.

WALKER, S. L., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

WALLACE, J., M.R.C.S., L.R.C.P. Lond., has been appointed to the Throat Department at St. Thomas's Hospital.

WARD, W. C. A., M.R.C.S., L.R.C.P. Lond., has been appointed Senior Ophthalmic House Surgeon at St. Thomas's Hospital.

WHITEHEAD, C. E., M.R.C.S., L.R.C.P. Lond., has been appointed House Physician to Out-patients at St. Thomas's Hospital.

WHITEHOUSE, H. B., M.B., B.S. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

# Vacancies.

*For further information regarding each vacancy reference should be made to the advertisement (see Index).*

ABERDEEN UNIVERSITY.—McRobert Fellowship for Cancer Research. Salary £200 to £250.

ASHTON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum and fees. Also Junior House Surgeon for six months. Salary at rate of £50 per annum. Board, rooms, washing, &c., in each case.

BIRKENHEAD UNION INFIRMARY, WORKHOUSE, AND SANATORIUM.—Resident Assistant Medical Officer. Salary £120 per annum, with board, washing, and apartments.

BIRMINGHAM, QUEEN'S HOSPITAL.—Obstetric and Ophthalmic House Surgeon, for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

BLACKBURN AND EAST LANCASHIRE INFIRMARY.—Senior House Surgeon. Salary £110 per annum, with board, washing, &c.

BODMIN, CORNWALL COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £140 a year, rising to £160, with rooms, rations, laundry, and attendance.

BRIDGE OF WEIR CONSUMPTION SANATORIA.—Assistant Resident Medical Officer (female).

BRISTOL GENERAL HOSPITAL.—Pathologist. Salary £240 per annum.

CAMBERWELL PROVIDENT DISPENSARY.—Medical Officer.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon. Salary £80 per annum.

CAPETOWN, SOMERSET HOSPITAL.—Chief Medical Officer. Salary £450 per annum, with house.

CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer as House Physician and House Surgeon for six months each. Salary at rate of £80 and £100 per annum respectively, with board, lodging, and washing.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—Assistant Surgeon.

CHARING CROSS HOSPITAL.—Medical Registrar. Salary £40 per annum, with lunch and tea.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £50 per annum, with board and residence.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon for six months. Salary £80 per annum, with rooms, board, washing, and attendance.

DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road.—House Surgeon. Salary £40, with board and residence.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £25 per annum, with board and washing.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway.—Senior House Surgeon, Senior House Physician, Two Junior House Surgeons, and One Junior House Physician. Salary of Senior Officers £80 per annum, and of Junior Officers £50 per annum, with board, lodging, and washing.

HUDDERSFIELD INFIRMARY.—Junior House Surgeon. Salary £50 per annum, with board, lodging, and washing.

INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Assistant House Surgeon. Salary £75 per annum, with residence, board, and washing.

LEAMINGTON, WARNEFORD HOSPITAL.—House Surgeon. Salary £100 per annum, with board, washing, and apartments.

LEWES DISPENSARY AND INFIRMARY AND VICTORIA HOSPITAL.—Resident Medical Officer. Salary £120 per annum, with apartments, board, coal, gas, washing, and attendance.

LIVERPOOL DAVID LEWIS NORTHERN HOSPITAL.—House Surgeon, also House Physician. Salary £60 each per annum, with residence and maintenance.

MANCHESTER WORKHOUSE, Crumpsall.—Assistant Medical Officer, unmarried. Salary £110 per annum, with apartments, fire, light, washing, and attendance.

NORTHAMPTON, SAINT ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Third Assistant Medical Officer. Salary £150 per annum, rising to £200, with board, lodging, and washing.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £90 a year, with apartments, board, washing, and attendance.

NOTTINGHAM CHILDREN'S HOSPITAL.—House Surgeon (female) for six months. Salary at rate of £80 per annum, with board, residence, and washing.

ST. PANCRAS INFIRMARY (NORTH), Dartmouth Park-hill, N.—Assistant Medical Superintendent. Salary £120 per annum, with apartments, rations, and washing.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon. Salary £82 per annum, with board, residence, and laundry.

STOCKPORT INFIRMARY.—Assistant House and Visiting Surgeon. Salary £80 per annum, with board, washing, and residence.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £30, with board and lodging.

WANDSWORTH UNION INFIRMARY, St. John's Hill, near Clapham Junction.—Male Junior Assistant Medical Officer, unmarried, for six months. Salary at rate of £100 a year, with board, lodging, and washing.

WARWICK COUNTY ASYLUM, Hatton.—Junior Medical Officer. Salary £130, rising to £150, with apartments, board, washing, and attendance.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £50 per annum, with board, residence, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Second House Physician. Salary £80 per annum, with board, lodging, and laundry.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Johnstown, in the county of Cork; at Southwold, in the county of Suffolk; at Tetbury, in the county of Gloucester; and at Cork, in the county of Cork.

# Births, Marriages, and Deaths.

## BIRTHS.

KAYE.—On March 2nd, at Via Sistina, Rome, the wife of H. W. Kaye, M.B. Oxon., of a son.

PEARSE.—On March 4th, at The Lindens, Ripley, Surrey, the wife of F. Edward Pearse, M.R.C.S., L.R.C.P., of a son.

## DEATHS.

SCHOFIELD.—On March 2nd, at St. Martin's, Rodwell, Weymouth, Frank Schofield, M.D., in his 68th year.

STRANGE.—On Feb. 23th, at Belsize-avenue, Hampstead, William Heath Strange, M.D., C.M., aged 69.

WALKER.—On Feb. 27th, 1907, at Convers House, Newcastle-on-Tyne, Thomas Hatfield Walker, L.R.C.P., F.C.S., Public Analyst for the City of Carlisle, aged 56.

***N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.***

# Notes, Short Comments, and Answers to Correspondents.

## THE ABUSES OF PUBLIC ADVERTISING.

In the year 1905 a Bill introduced into the House of Lords by Lord Balfour of Burleigh for checking the abuses of public advertising passed its third reading. In the Lower House the session was too far advanced to enable the Bill to make any progress. In the year 1906 it was introduced in favourable circumstances by Mr. Hart-Davies but fell a victim to blocking. It is hoped that the Bill will meet a better fate during the present session. The main point thereof is to give power to local authorities "for regulating, restricting, or preventing the exhibition of advertisements in such places and in such manner or by such means as to affect injuriously the amenities of a public park or pleasure promenade or to disfigure the natural beauty of a landscape." It may be said that there is nothing medical about advertising but the charm of the country to the tired town worker must be diminished if everywhere, as is the case along at least one main line of railway, his eyes are constantly met by appeals to try Podger's pills or Low's lightning lung liquor. Even the sails of fishing boats have been made mediums for puffing some commercial preparations. We earnestly hope that the abuse in question may be checked and that the Government will take the matter in hand. The Bill, which was read for the first time on Feb. 28th, is backed by members of all parties in the House, so that it cannot be said to be contentious.

## A QUESTION OF ETHICS.

*To the Editors of* THE LANCET.

SIRS,—The Local Government Board sends down a medical inspector to inquire into the causes of an outbreak of diphtheria in an urban district council's district. In his report thereon he advises the closure of a row of six houses which he describes as miserable dwellings, built into the canal embankment; percolation is going on into the houses and damp could be seen trickling down the back walls. The local medical officer of health condemns the houses, the county medical officer of health backs him up. The owners sell the property to a local builder at pulling-down price; the latter, instead of clearing the tenants out and pulling down the houses, sets his men to work, re-spouts, plaster up, and colour-washes the damp walls and asphalts the floors and then turns round and defies the local authority. Do you consider it good ethics for two neighbouring medical officers of health (one for a borough and one for an urban district council) at the subsequent police court proceedings (in face of the evidence of the Local Government Board inspector, county medical officer, and the local medical officer of health) to come and give evidence for the builder (defendant) and say the houses are fit for habitation?

I am, Sirs, yours faithfully,

March 7th, 1907. ENQUIRER.

*** Our correspondent heads his letter "A Question of Ethics," but it is really a question of facts. We must presume that the two neighbouring medical officers of health have arrived at the conclusion, after due deliberation, that the builder, much to his own profit, has contrived to render the dwelling-houses habitable again. Of course, such a conclusion is very amazing in the face of the mass of evidence against its probability, but there can be nothing unethical about the conduct of the medical men who hold such a view. If the suggestion is that they do not really hold the view at all, their conduct would not be unethical but dishonest. We do not, however, understand our correspondent to make such an accusation.—ED. L.

## QUACK ADVERTISEMENTS.

In the course of an inquest held at the beginning of the year it was stated that a labourer who had died from consumption had been using Dr. Tucker's asthma specific inhaler, for which he had given, according to a newspaper report which has reached us, 3 guineas, while the material with which he had sprayed himself cost him 8*s.* an ounce. Dr. F. J. Waldo, the coroner, rightly stigmatised this kind of dealing as a fraud and it is a humiliating thing for journalists to remember that such frauds could not be committed with any profit to the quack save with the coöperation of the press. A correspondent has recently sent us a collection of advertisements of so-called proprietary medicines which he had cut from papers of high reputation in the country, inviting our opinion of them. Our opinion is that the misery wrought by quacks must be unknown to a good many proprietors of newspapers or they would hardly share with the quacks the plunder extracted from the public, mainly from the sick poor. The remedy is in the hands of the public, who have only to signify their displeasure at reading in their journals invitations to be robbed and poisoned to find those invitations immediately cease. But the public are largely uninstructed and credulous and, alas, those responsible for the conduct of many of our journals take no trouble to enlighten them. They prefer to regard all protests against quack advertisement as emanating from the narrowness of the medical profession. This is certainly a convenient faith, but how it can be truly held by educated people passes our comprehension.

## A RETIRED MEDICAL MAN AND GOOD OPENINGS.

*To the Editors of* THE LANCET.

SIRS,—In THE LANCET of March 2nd you made severe comment upon the professional propriety of replying to an advertisement in your journal for a small practice or nucleus. Through an advertisement which appeared some weeks since in the medical and lay press to which I replied I became acquainted with the details set out in my letter addressed to your correspondent. Having known the locality for years I was able to endorse all that the advertiser had said and thought there was room and to spare for another man. I am still of that opinion and think the residents in that district would be pleased to hear that additional medical help was at hand. The locality is exceptional for the shortage of medical men in proportion to the population. What harm there can be in conveying such information to one who, like many others in the profession, is not better off than he may possibly deserve I fail to perceive, or, moreover, in asking a small fee for my trouble. You make the unworthy and absolutely false insinuation that I am desirous of introducing a man into my immediate neighbourhood for which I shall be glad to receive an explanation. From a business point of view you have a high appreciation of the services of medical agents, which is a mere expression of gratitude upon your part. Their vocation is the disposal of practices, of which they know nothing beyond what the vendor tells them. They do their best, as a rule, for both sides, which does not always turn out well for the purchaser. I have purchased three practices and lost the following sums: £1000 the first, £1500 the second, and £400 the third. Partners seldom agree, so that an opening is less risky, and, to my knowledge, there are many good ones.

I am, Sirs, yours faithfully,

F. FITZHERBERT JAY.

PS.—Gathering courage from the perusal of your attack upon my professional attitude I have to acknowledge the receipt of an open postcard through the post of the most insulting and libellous character, bearing the Plaistow post-mark, a suitable locality for the writer to pass the rest of his days.

6, Stone-street, Faversham, March 2nd, 1907.

*** Dr. Jay writes as though the action which provoked our unfavourable comment was an individual instance but this is not so. To whatever locality a medical man is introduced upon Dr. Jay's method the other medical men in that locality must find themselves confronted by a new rival, and that is the position which we consider it unprofessional of Dr. Jay to bring about in return for pecuniary benefit to himself. The passage which Dr. Jay refers to does not and was not intended to convey "the unworthy and absolutely false insinuation" that he was desirous in this instance of introducing a medical man into his immediate neighbourhood. The words are a general comment on the situation, while Dr. Jay's own letter, describing the locality where a medical man could oust an unpopular colleague, was dated from Faversham, more than 50 miles from London, and alludes to the spot in question as only 20 miles from London.—ED. L.

## A DRAMATISED VERSION OF THE PILGRIM'S PROGRESS.

UNDER the auspices of Mrs. W. Hadley and Miss E. Ouless an interesting performance is announced to take place at the Imperial Theatre on the afternoon and evening of March 16th at 2.30 and 8.30 P.M. The proceeds will be equally divided between the London Hospital and the South London Diocesan Church Funds. The programme promises to be of more than usual interest and is certainly of a somewhat different class to that which is effected by the average amateurs, as it will consist of a "dramatised version," adapted and arranged by the two ladies themselves, of Part I. of Bunyan's "Pilgrim's Progress." The incidental music has been composed and arranged by Dr. R. Vaughan-Williams and the tableaux have been arranged under the advice of Mr. Frank Dicksee, R.A. Tickets can be obtained from the Hon. Sydney Holland, the London Hospital, E.; Miss Talbot, Bishop's House, Kennington, S.E.; Mrs. W. Ouless, 12, Bryanston-square, W.; Mrs. W. Hadley, 33, Queen Anne-street W.: and from Messrs. Chappell and Co., 50, New Bond-street, W. (Tel. No. 5216 Gerrard), where a plan of the theatre can be seen.

## "DON'T PICK ME UP."

*To the Editors of* THE LANCET.

SIRS,—There was a time when it was a pleasure to buy and look through *Pick-Me-Up*, but at the present time the advertisements which disgrace its cover render it unfit to be left about. Here are some of the subjects of the advertisements in question: "A Sealed Book, for Tired Men"; a something "Superior to Copaiba"; "The Perfect Cure of Varicocele"; "Improved Remedies to Ladies when all else fails"; seven other "remedies" for "weak men," and nine advertisements for French letters—"Rubber goods." Would it be worth while calling the attention of the police to certain of the advertisements I wonder? I am not squeamish, Sirs, but I am

DISGUSTED.

## THE EDUCATION OF DEFECTIVE CHILDREN.

In reply to the correspondent who asked in THE LANCET of Feb. 23rd what would be the best books to read upon (1) the education of defective children, and (2) the medical inspection of school children, several readers have supplied the following answers: (1) "Mentally-Deficient Children: Their Treatment and Training." By Dr. G. E.

Shuttleworth. Second edition. 1900. H. K. Lewis, London. Price 5s. net. (2) "The Medical Inspection of School Children." By Dr. W. Leslie Mackenzie and Mr. R. Matthews. 1904. W. Hodge, Edinburgh and Glasgow. Report on the Medical Inspection of School Children, 1905. (Vol I., price 1s. 3d.; Vol. II., price 3s.). The following should also be consulted: "The Health of the School Child," by Dr. W. Leslie Mackenzie; Methuen and Co., London, price 2s. 6d. "The Children of the Nation," by Sir John Gorst; Methuen and Co., London; price 7s. 6d. "The Children, How to Study Them"; second edition, 1896; and "Nervous System of the Child, its Health and Training," both by Dr. Francis Warner. Publications of the Childhood Society, 72, Margaret-street, London, W., especially its Report on the Scientific Study of the Mental and Physical Conditions of Childhood.

### "A TEMPTING BAIT."

WE have received from Bovril, Limited, a signed artist's proof of their latest bonus picture, which is an excellent reproduction of an oil painting by Mr. Arthur J. Elsley entitled "A Tempting Bait," the original of which was exhibited in the Royal Academy in 1906. The subject of the picture, it may be remembered, is a group of children in a sylvan landscape. A little boy in the foreground holds out to a Shetland pony an apple, and a collie dog, which is clasped round the neck by one of the children, is an interested spectator of the proceedings. The picture was much admired during the exhibition and Messrs. C. W. Faulkner and Co., who are responsible for the gravure, are to be congratulated upon its execution.

### WANTED—A HOME.

A CORRESPONDENT asks us for the address of any private hospital or institution where a female patient suffering from partial paralysis which is likely wholly to incapacitate her in time could be received. We have made certain fruitless inquiries and now appeal to our readers on the chance of their being able to help in the matter. We understand that the patient would be unable to pay more than 25s. per week.

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*Mr. G. W. Haven.*—Our correspondent is under no obligation to attend the case in his private capacity. If the patient obtains an order for his attendance as a district medical officer he should explain the situation to the local union, when pressure might be brought to bear upon the woman to go to a hospital.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

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# Medical Diary for the ensuing Week.

## OPERATIONS.

### METROPOLITAN HOSPITALS.

**MONDAY (11th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.), St. Mark's (2.30 P.M.).

**TUESDAY (12th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), West minster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

**WEDNESDAY (13th).**—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), West minster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

**THURSDAY (14th).**—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.), Tottenham (Gynæcological, 2.30 P.M.).

**FRIDAY (15th).**—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

**SATURDAY (16th).**—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London phthalmic Hospitals operations are performed daily.

## SOCIETIES.

**MONDAY (11th).**—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M.: Address: Prof. Dr. F. Trendelenburg (Leipzig).

**TUESDAY (12th).**—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M.: Paper:—Dr. A. F. Hertz: Observations on a Case of Chyluria occurring in England, with a Report of the Post mortem Examination. (Epidiascope demonstration.)

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN (17, Bloomsbury-square, W.C.).—8 P.M.: Recent Additions to the Museum and Library will be exhibited in the Examination Hall. Paper:—Mr. P. A. W. Self and Mr. H. G. Greenish: The Assay of Cantharides. (Communication from the Pharmaceutical Research Laboratory.)

MEDICO-LEGAL SOCIETY (22, Albemarle-street, W.).—8.15 P.M.: Paper:—Dr. E. Pratt: A Case of Sudden Death at the Climacteric. Discussion on the Working of the Midwives Act, 1902 (introduced by Mr. J. T. Dodd). Several members of the Central Midwives' Board have promised to attend.

**WEDNESDAY (13th).**—HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—8 P.M.: Short Discussions on Diseases of Children. Short Papers:—Dr. G. Carpenter: Nephritis.—Dr. D. Lees: Administration of Salicylates.—Mr. H. Barnard: Intussusception.

DERMATOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—5.15 P.M.: Meeting.

MEDICAL SOCIETY OF LONDON (Whitehall Rooms, Hôtel Métropole).—7 P.M. Anniversary Dinner.

**THURSDAY (14th).**—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8 P.M.: Card Specimens. 8.30 P.M.: Papers:—Dr. W. C. Rockliffe: (1) Acute Septic Meningitis with Thrombosis of Cavernous Sinus; (2) Sympathetic Irritation occurring after 18, 22, 28, and 50 Years.—Mr. A. R. Brailey: Cysts of the Ciliary Body.

SOCIETY OF ARTS (John-street, Adelphi, W.C.).—4.30 P.M.: Sir James Thomson: The City of Madras.

BRITISH GYNÆCOLOGICAL SOCIETY (20, Hanover-square, W.).—8 P.M.: Specimens will be shown by Mr. Spanton, Dr. Macnaughton-Jones, and Mr. Jessett. Paper:—Mr. S. Bishop: Mobile Kidney, with a Description of an Operation for Anterior Hepatopexy.

**FRIDAY (15th).**—SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, Cavendish-square, W.).—5 P.M.: Papers and Clinical Evening followed by Discussion. Patients in attendance from 4.30 P.M.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

**MONDAY (11th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. H. G. Adamson: Clinique. (Skin.) 5.15 P.M.: Lecture:—Dr. S. R. Wells: The Failing Heart.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon: Pathological Demonstration:—Dr. G. C. Low. 2 P.M.: Medical and Surgical Clinics. X Rays. Mr. Dunn: Eye Department. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Dr. Ball: Suppuration of the Maxillary Antrum (with lantern slides).

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—9.30 A.M.: Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Medical Out-patient (Dr. Whipham), Throat, Nose, and Ear (Mr. Carson); X Ray (Dr. Pirie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. StClair Thomson: Diseases of the Throat, Nose, and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat. 4 P.M.: Special Lecture:—Dr. StClair Thomson: Hoarseness.

**TUESDAY (12th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. B. Abrahams: Clinique. (Medical.) 5.15 P.M.: Lecture:—Dr. A. W. M. Robson: The Treatment of Acute Peritonitis.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. M. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. X Rays. 2.30 P.M.: Operations. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. Ball: Suppuration of the Maxillary Antrum (with lantern slides).

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—10.30 A.M.: Medical Out-patient (Dr. Auld). 2.30 P.M.: Gynæcological Out-patient (Dr. Giles), Surgical Out-patient (Mr. Edmunds). Surgical Operations (Mr. Carson). 4.30 P.M.: Demonstration:—Mr. H. Evans: Affections of the Breast.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 3.15 P.M.: Special Lecture: Mr. Carless: When to Operate on Appendicitis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. A. Turner: Treatment of Epilepsy.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Mr. Daniel: (Surgical). (Post-Graduate Course.)

**WEDNESDAY (13th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. M. Collier: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. G. N. Pitt: Brachial Paralyses.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations. 5 P.M.: Mr. Parkes: The Treatment of Chronic Urethritis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—Cliniques:—2.30 P.M.: Skin (Dr. Meachen), Eye (Mr. Brooks), Medical Out-patient (Dr. Whipham).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. F. Taylor: Medicine. 3.30 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M.: Lecture:—Dr. D. Grant: Laryngeal Tuberculosis, Demonstration of Cases.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Mr. C. Nourse: Larynx.

**THURSDAY (14th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Mr. F. C. Wallis: Suppuration in Bone—Non-tuberculous.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. X Rays. Mr. Dunn: Eye Department. 2.30 P.M.: Operations. 5 P.M.: Lecture:—Mr. Baldwin: Practical Surgery.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Gynæcological Operations (Dr. Giles). Cliniques:—Medical (Dr. Whiting), Surgical Out-patient (Mr. Carson). 3 P.M.: Medical In-patient (Dr. Chappel). 4.30 P.M.: Lecture:—Dr. G. F. Still: Some Medical Aspects of Physical and Mental Development in the Child.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Dr. H. Cooper: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

CHARING CROSS HOSPITAL.—4 P.M.: Dr. Bosanquet: Demonstration (Medical). (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M.: Lecture:—Mr. Lane: Intestinal Stasis.

**FRIDAY (15th).**—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. R. Lake: Clinique. (Ear.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. M. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. X Rays. 2.30 P.M.: Operations. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. S. Taylor: Gout.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld), Eye (Mr. Brooks). 3 P.M.: Medical In-patient (Dr. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 2.15 P.M.: Special Lecture:—Dr. R. Bradford: Chronic Bright's Disease.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Mr. Armour: Surgery of the Nervous System.

**SATURDAY (16th).**—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. X Rays. 2.30 P.M.: Operations.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

## EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

*It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.*

*Lectures, original articles, and reports should be written on one side of the paper only,* AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

*Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.*

*We cannot prescribe or recommend practitioners.*

*Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."*

*Letters relating to the publication, sale and advertising departments of* THE LANCET *should be addressed "To the Manager."*

*We cannot undertake to return MSS. not used.*

## MANAGER'S NOTICES.

### THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1906, which was completed with the issue of Dec. 29th, were given in THE LANCET of Jan. 5th, 1907.

### VOLUMES AND CASES.

VOLUMES for the second half of the year 1906 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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### TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

## METEOROLOGICAL READINGS.

*(Taken daily at 8.30 a.m. by Steward's Instruments.)*

THE LANCET Office, March 7th, 1907.

| Date. | | Barometer reduced to Sea Level and 32° F. | Direction of Wind. | Rainfall. | Solar Radiation Vacuo. | Maximum Temp. Shade. | Min. Temp. | Wet Bulb. | Dry Bulb. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|
| Mar. | 1 | 30·476 | S.E. | ... | 84 | 53 | 37 | 38 | 38 | Foggy |
| ,, | 2 | 30·320 | S.W. | ... | 71 | 52 | 38 | 40 | 41 | Foggy |
| ,, | 3 | 30·330 | S.E. | ... | 66 | 50 | 38 | 38 | 40 | Foggy |
| ,, | 4 | 30·326 | E. | ... | 71 | 47 | 37 | 36 | 38 | Overcast |
| ,, | 5 | 30·154 | S.W. | ... | 76 | 48 | 32 | 33 | 33 | Foggy |
| ,, | 6 | 30·114 | NNW | 0·16 | 84 | 50 | 33 | 37 | 39 | Fine |
| ,, | 7 | 30·310 | S.W. | ... | 61 | 45 | 38 | 38 | 41 | Overcast |

**During the week marked copies of the following newspapers have been received:**—*Sudan Gazette, Bolton Journal and Guardian, Manchester Courier, Feuille d'avis de Montreux, La Médecine Sociale, Western Daily Express, Notts Evening Post, Bristol Daily Mercury, Mark Lane Express, Health, Morning Leader, Daily Report, Bournemouth Observer, Notts Evening News, Bakers Record, Confectioner, Times, Tribune, Local Government Journal, British Architect, Morning Post, Daily Chronicle,* &c.

## Communications, Letters, &c., have been received from—

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